MARINE RECORD

ESTABLISHED 1878.

VOL. XXI, No. 47. CLEVELAND---NOVEMBER 24, 1898---CHICAGO. $2.00 Per Year. 5c. Single Copy.

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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

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SOCIETY OF NAVAL ENGINEERS.

The Marine Architects and Naval Engineers closed the proceedings of their society on Friday evening of last week with a banquet at Delmonico's which was presided over by President Clement A. Griscom, and at which speeches were made by ex-Senator Edmunds, Harvey D. Goulder, Lewis Nonix, P. A. Engr.; Wm. L. McFarland, U. S. N.; Theo. A. Search and Captain J. W. Miller, of the Naval Reserve. Personal toasts were offered in honor of William H. Webb, "the Father of American Ship-building;" Charles H. Haswell, "the Oldest Engineer;" Naval Constructor Francis T. Bowles and President Griscom. On Saturday 150 members of the society visited the Bethlehem Iron Works, and were most hospitably entertained by President Frick, Mr. Davenport and other representative of that great industry. They were taken to Bethlehem and returned to New York on a special train and were carried through the immense shops of the company, one of them a quarter of a mile long, in open box cars with improvised seats, so that they could watch the various processes of manufacture at their ease. A handsome lunch was provided for them, and the vote of thanks tendered to the company at its close was a hearty expression of sincere recognition of hospitalities received. It was appropriately acknowledged by Mr. Davenport. A practical test of the new armor plate was on the programme, but too much time was occupied in examining the interior of the huge plants and the disappointment was general when it was announced that there was not time enough to make the four miles trip overland to witness the test. The methods used at the Bethlehem works are unique and the great interest in naval affairs just now led the members of the society, as well as their guests, and those not versed in technical details, to eagerly watch the process of forging armor plates.

THE WORLD'S MERCANTILE MARINE.

The following data respecting the principal mercantile fleets of the world we extract from the Repertoire General de la Marine Marchande, published by the Bureau Veritas. The sailing ship tonnage only takes cognizance of vessels over 50 tons net, and the steam tonnage of vessels over 100 tons gross:

STEAM TONNAGE (Gross).

	1897.	1898.
British Empire	10,552,498	10,998,111
Germany	1,462,530	1,625,521
France	979,072	952,682
United States	772,002	810,800
Norway	576,598	628,493
Spain	492,393	520,847
Japan	408,503	439,509
Italy	371,468	420,880
Holland	337,517	363,290
Russia	314,293	358,415

SAIL TONNAGE (Net).

	1897.	1898.
British Empire	3,098,618	2,910,565
United States	1,332,829	1,285,859
Norway	1,103,284	1,144,482
Germany	544,420	535,937
Italy	451,408	463,767
Russia	399,359	458,392
France	269,667	279,412
Sweden	280,167	272,799
Turkey	270,075	252,909
Greece	246,429	238,008

The total number of the world's sailing vessels over 50 net tons is put down at 28,885 of 8,893,769 tons, against 29,315 of 8,894,732 tons in 1897. The steamers of 100 tons gross and over, number 11,576 of 18,887,132 tons against 11,271 of 17,889,006 tons in the previous year. From these tables it appears that Great Britain and her colonies own close upon 33 per cent. of the world's sailing ship tonnage, and more than 58 per cent. of the gross steam tonnage of the world.

PROPOSALS are asked for building pile and timber revetments for ship canals across Keeweenaw Point, Mich. Specifications will be furnished by Major Clinton B. Sears, Corps of Engineers, U. S. A., Duluth, Minn.

DEPARTMENTAL TONNAGE FOR THE LAKES.

It was thought in the earlier part of the season that some of the auxiliaries called upon by the Navy Department during the recent war could be made available for use on the lakes as light-house tenders, revenue cutters, etc. A well known shipbuilder in an interview gave it as his opinion that some of them would thus be employed. None of the light-house engineers, inspectors and officials of other departments had anything to say against it at the time, but when the war ended and there seemed a prospect that some of these vessels might be brought through the St. Lawrence canals, the officials lost no time in protesting.

In their opinion there was really nothing available of the large fleet of auxiliaries that the ocean districts had not already gobbled up. Indeed, four small steel steamers, built for use on the lakes as revenue cutters, the Gresham, Algonquin, Onondaga and Calumet, were sent to the coast, ostensibly to do naval duty, and there is no chance that they will ever come back, if report is to be believed, even when the St. Lawrence canal enlargement is completed. One of these, the Calumet, is as necessary in and about Chicago harbor as she ever was, but this duty, it seems, is to be assigned to the Morrill, in addition to her other duty of patrolling Lake Michigan and the Straits.

The Algonquin was intended to replace the Fessenden on the Detroit station, patrolling the waters of Lakes Michigan and Huron and all the rivers down to Lake Erie. The Fessenden, which now does this duty, in addition to Lake Erie, is an iron hull, fourteen years old, and too small for the purpose. At least this is what the Treasury Department thought when it gave the contract for a modern steamer to take her place.

The Onondaga was intended for the Cleveland district, which takes in the waters of Lake Erie. She could have been kept busy all the time on this lake, which is the most densely covered of all with boats. The chief object of these cutters is the enforcement of the steamboat inspection laws. It looks as though the laws were not as well enforced now as they would be with a sufficient number of patrol steamers. These laws are of the utmost importance to public safety. The fleet that sails through those districts is very large and it carries every year millions of lives. Well found boats and competent equipment is what these millions of people demand. Do they get it now in all cases?

The Detroit Free Press says: There is a crying need on the lakes for light-house tenders, but the inspectors and engineers do not want the steamyachts that were used as torpedo and scout steamers during the war. Yachts built for the pleasure of millionaires are but flimsy things when it comes to doing hard sea duty, so to speak. It is all right to put a few small pounder guns aboard and send them scudding here and there in search of signs of danger. But they have neither the hold capacity nor the strength to do heavy carrying work; speed they have in plenty, but that is of no account for light-house uses. Every ocean cutter and every tender impressed into the naval service during the war has been returned to its own or some other ocean station, except the Morrill. The Milwaukee district is in luck to get the Morrill sent up from the coast to be stationed there, but she is not for a moment to be compared to the Gresham, whose place she is to take. There is no donbt that when demands are to be gratified the ocean districts will get the best of it at the expeuse of the lakes every time.

IT is learned from competent sources that the American Steel Barge Co. has about contracted for another steel towbarge. The plans have been submitted and practically accepted. The third vessel will not be the equal of the new Bessemer barge in carrying capacity, her plans calling for a length of but 450 feet, while the new Bessemer barge is 466 feet over all.

NEWS AROUND THE LAKES.

CHICAGO.

Special Correspondence to The Marine Record.

Capt. John Prindiville chartered the steamer Lansing for corn to Buffalo at 2 cents.

Grain freights continue on the basis of 2 cents on corn to Buffalo; 1¾ cents to Port Huron; 1⅞ to Georgian Bay.

The Goodrich Transportation Co.'s sidewheel steamer Sheboygan has gone into winter quarters at Manitowoc.

At Miller Bros.' shipyard the tug Robbie Dunham was in dock for repairs to stern bearing and some bottom calking; the steamer Arcadia was in and received a new rudder pintel.

The barge Iron Cliff, which was raised and brought in here last week by the Dunham Towing and Wrecking Co., is now in one of Miller Bros.' dry docks, having a survey of her condition made by Capt. Lindley and James B. Bates.

The schooner James Mowatt, consort of the steamer Jim Sheriffs, was towed in here Sunday afternoon by one of the Independent Tug Line's tugs, the Mowatt's tow line having parted when off Grosse Point. The Sheriffs also came into port to wait while her consort obtained a new tow line, and for better weather. The Sheriffs had loaded pig iron at Milwaukee and then went to South Chicago for the Mowatt which loaded there.

Countess Schimmelman's missionary schooner yacht Duen arrived here Friday night. She is a trim little craft. Her dimensions are 53 net tons, 82 feet over all, 18 feet beam, 9 feet hold. She has been placed in winter quarters at the dock on the northwest side of Rush street. She is to be housed in and mission meetings will be held on board. The Countess will see that the temporal as well as the spiritual welfare of those who attend the meetings be cared for and will supply hot coffee and eatables to those who require them.

The harbor masters and bridge dispatchers have been laid off by a recent order from the Commissioner of Public Works, and vesselmen are arising in protest. The harbor masters are most invaluable at this season of the year, for vessels will be laying up from now until the last of December, and the ingenuity of the harbor master is always taxed to the utmost to provide berths for all the winter fleet, and still keep a channel open for the big boats going to the elevators. A protest will likely be taken to the mayor to have the harbor masters replaced.

The Northern Michigan Transportation Co. have closed a contract with the Chicago Ship Building Co. to build a steel passenger and freight steamer of the following dimensions, 240 feet over all 40 feet beam, 16 feet molded depth, also a triple-expansion engine with cylinders 20 and 33 and 54 by 36 inches stroke, and two Scotch boilers 14 by 11½ inches to be allowed 175 pounds steam pressure. Her electric light plant will comprise two dynamos and two engines with a lighting capacity of 250 lights each, also a search light. Hot and cold water will be supplied in every room. She will have two cabin decks and sleeping accommodation for 200 persons. She will have six water-tight compartments and the highest class rating possible, a guaranteed speed of 17 miles per hour and will be the most modern freight and passenger steamer on the Great Lakes. She will be scheduled for three trips per week between Chicago, Charlevoix, Petoskey, Harbor Springs and Mackinac Island. The new steamer is to go into commission on June 15 next. Her value when completed ready for service will be $250,000.

Owners of elevators in the south branch of the Chicago river made a strong plea at the City Hall last Friday for the removal of the obstruction caused by the Wisconsin Central Railroad bridge near Taylor street. It was at this point that the Amazon stuck fast for many hours on Thursday, completely blocking navigation. Three roads use that bridge to reach their central passenger station. They are the Baltimore & Ohio; Chicago, Great Western, and Wisconsin Central. When the bridge was built the terminal company succeeded in getting away from the city a large slice of land out of the river without compensation. The railroads now refuse to do anything for the removal of the obstruction which their bridge, in connection with Taylor street bridge, causes, notwithstanding they are now and then deprived of their Chicago depot by boats being stuck in the draw. The drainage board has offered to spend $250,000 in widening the channel at the point and in replacing the bridge, but the railroad people insist that the drainage board must not only widen the channel and build new bridges, but also relay their tracks and make everything in apple pie order without a cent of expense to the corporation.

It is understood that the government will be asked to make good the loss occasioned by the wrecking of the schooner Lena M. Neilson. Capt. Neilson claims that had it not been for the wreck of the City of Duluth he could easily have entered St. Joseph harbor, but being compelled to go around it, as he was, the wind and waves beat him beyond the harbor, resulting in the wrecking of his vessel. He claims that the government is guilty of negligence in not having had the wreck of the Duluth removed long ago; that it was known to be a detriment to shipping, and that it was an obstruction that should have been removed without the slightest delay. A claim for the loss of the vessel will be made by a party holding an $800 mortgage on the schooner, and it is said that he has plenty of money and influence to back up his claim.

CLEVELAND.

Special Correspondence to The Marine Record.

There is quite a block of ore to move from Two Harbors yet, that is if the pockets don't freeze up within the next few days.

Frost has struck the ore pockets at the Lake Superior docks and ore shipments from this forward will therefore be curtailed until the final close down.

The barges J. S. Russell, John Fritz and A. Krupp, of the Bessemer fleet, were towed to Lorain on Saturday last to lay up for the winter. The two latter were towed by the tug Harvey D. Goulder, and constituted the largest tow ever taken out of this harbor.

The L. P. Smith, the tug that was sunk through collision several weeks ago, was raised Tuesday morning. The body of John McCarty, the fireman who was drowned at the time of the accident, was found in the hold of the vessel. The body was in a state of decomposition.

Mr. J. E. Thayer, inspector for Bureau Veritas for the Pacific coast, and stationed at San Francisco, was among the callers at this port during the week. The Bureau Veritas have an unusually excellent corps of surveyors, and Mr. Thayer is an excellent representative of the staff.

The Cleveland ship yards have more new work than any of the yards at other ports. The Globe Iron Works Co. and the Cleveland Ship Building Co. have each two large steamers to build, but they have room for more work and as there is more in sight another contract may be closed before many days.

Lorain is already prepared to appoint a harbor master to regulate the shipping frequenting that port. The establishment of the Cleveland Ship Building Co.'s yards, dry dock, etc., as well as the large steel works and other important industries may soon have the effect of making Lorain put on airs metropolitan.

In coal freights vessel owners were willing but not anxious to take fifty cents to Lake Superior. Shippers were not able to see it in that light, and little business was done. With coal at fifty cents, shippers have reached their limit. There are very few cargoes which must be moved and no others will be handled, as the supply is fairly up to the average in the Northwest.

Col. Jared A. Smith, United States Engineer, has closed a contract with L. P. & J. A. Smith to make repairs on the west breakwater sufficient to enable it to last through the winter. The contractors will put a facing of heavy timber on the inside wall and fill up with rip-rap. The job is expected to take about two weeks and will cost in the neighborhood of $20,000.

The steamer Samuel F. B. Morse and the barge Roebling of the Bessemer fleet left Duluth on the last trip down with cargoes of grain that would have provided a full load for six or seven of the largest freighters of only ten years ago. The Morse has a cargo of 221,000 bushels of wheat, and the Roebling carries the equivalent of 252,000 bushels of wheat, both cargoes aggregating 470,000 bushels.

The City of Mackinac will make her last trip to Mackinac and way ports, leaving Detroit Friday morning at 9:30 o'clock. Passengers desiring to make this steamer can leave Cleveland Thursday night on the City of Cleveland, which leaves the wharf, foot of Superior street, at 10:15 p. m. Daily service except Sunday between Cleveland and Detroit will be continued as long as the weather permits.

BUFFALO.

Special Correspondence to The Marine Record.

The steamer John Rugee will finish the season in the coal trade on Lake Ontario, trading between Charlotte and Ogdensburg.

Capt. John H. Molloy, late master of the propeller W. H. Stevens, of the Union Transit Line, died at this port on Friday afternoon last after a lingering illness.

The tug Walker, which sank near Nicholson's Island, Lake Ontario, will be raised by the Donnelly Wrecking & Salvage Co., of Kingston, the contract of the work having been let to that firm on Monday.

The wooden steamer Josephine has been sold by C. W. Elphicke & Co., of Chicago, to New York parties. It is thought that the steamer was bought by the Manhattan Steamship Co. The price is not known here. The Josephine left Ogdensburg, bound for the coast, yesterday morning.

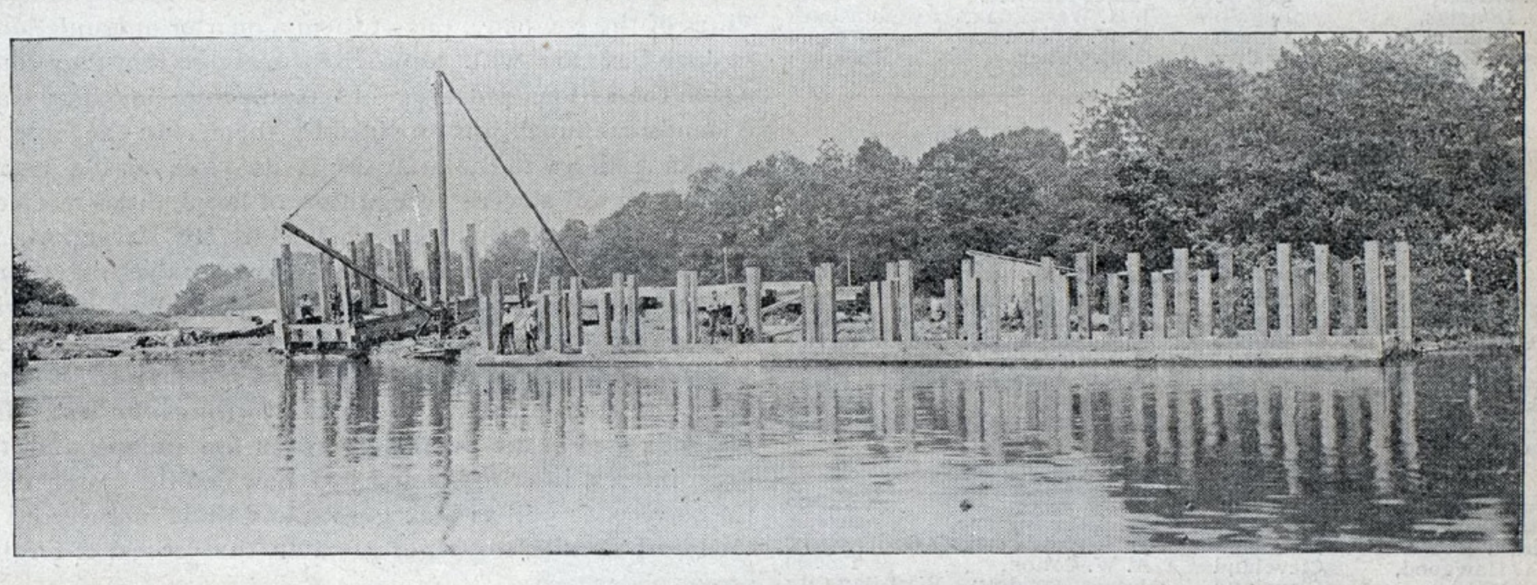
Capt. James H. Kelleran made a survey on the bottom damage of the propeller Starrucca. The vessel is now in the drydock. It was found that her bilge plates were bent and frames broken, but she is not so badly damaged as was at first supposed. Supt. Gaskin stated that it would require about three days more work in which to make repairs. The Starucca will be ready for business again early next week.

Local contractors have been requested to present bids for the dredging of 500,000 yards of earth from the harbor of Massena, N. Y. The Buffalo Dredging Co. is among those who will compete for the work. The two large suction dredges, built at the Union Dry Dock and sent to Lake Ontario, were designed for this work, but it is claimed that upon trial they are found unsuitable for the purpose. They will probably be taken to the coast.

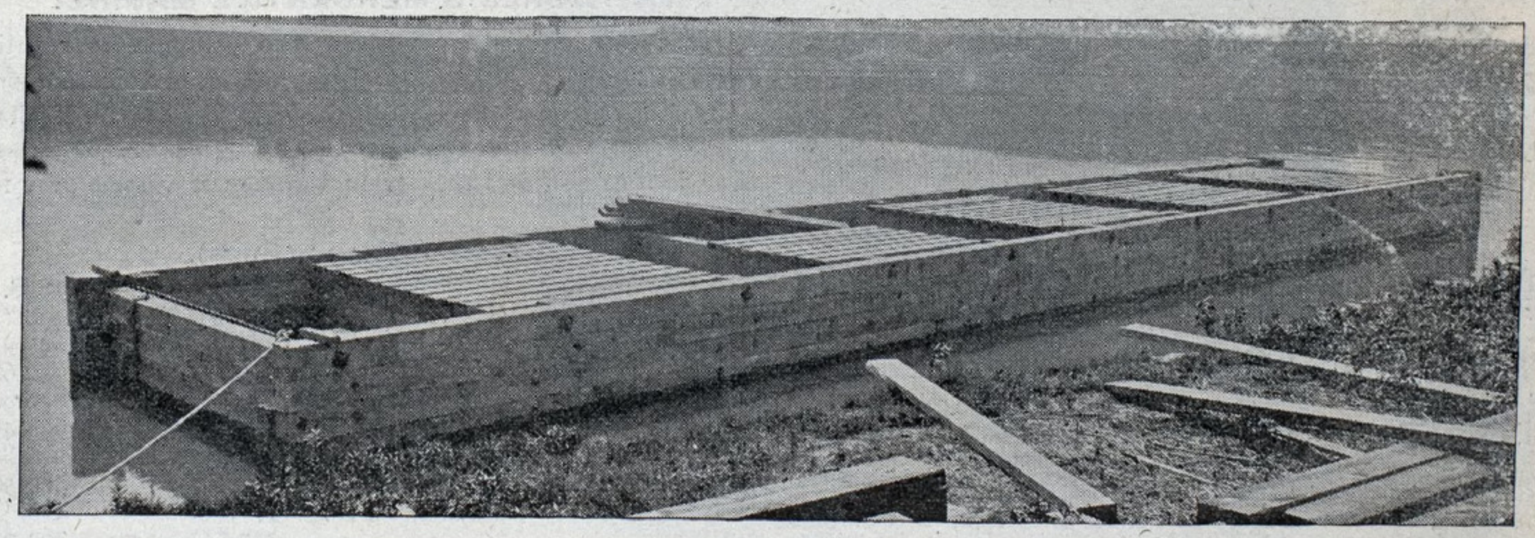
There is always more or less discussion about the predictions of the Weather Bureau, and some of the older heads simply sneer at the prognostications saying that they have no use for such stuff as barometers or any other scientific measures, in fact one owner here was heard to say that he wouldn't allow a barometer aboard of any of his vessels, and that it was only fools that watched the readings of such

PIER AND BREAKWATER CONSTRUCTION.

Crib work for piers and breakwaters as designed by Col. Jared A. Smith, Corps of Engineers, U. S. A. The new west pier and breakwater at Cleveland will be constructed on this general plan.



Cut No. 1.—Several Cribs, joined while Afloat.—Building-Up Process Begun.



Cut No. 2.—Section of Crib Completed, Ready for Ballasting and Sinking in Place.

an instrument. There is some hope though for this ignorantly smart owner, and he may learn that even he dosen't know it all.

The sidewheel excursion steamer Corona burned to the water's edge at Edgewater, opposite Tonawanda, where she was laid up at the close of the excursion season. The fire is believed to have been of incendiary origin. The Corona was built in Manitowoc in 1870, and ran for many years on Lake Michigan in the Goodrich Line. She was brought here about seven years ago and ran on various excursion routes. Two years ago she was rebuilt at the Union Dry Dock, and the Union people still hold a mortgage against the boat for $8,000. Her present owner is Benjamin Cowes.

The City of Buffalo did not reach here on her regular trip Wednesday morning. It is now learned that trips from Cleveland will be made this week on Wednesday and Friday only. The Gordon Campbell has laid up, and the India, China and Japan will lay up on their arrival. The City of New York, with her consorts, William Grandy and A. C. Keating, will lay up at Port Huron. There are quite a number of the smaller and older class of vessels seeking winter quarters but the best of the lake fleet, and that of course, is the majority in point of numbers and tonnage, are pegging away as fast as possible, and undue detention will not be tolerated at any port. The last couple of trips may put a little "gilt on the gingerbread" and pull up for the starvation rates of freight paid during the summer months.

DETROIT.

Special Correspondence to The Marine Record.

The light-house tender Dahlia removed the buoys from Lansing. Hog Island, Vienna, Skillagallee and Waugoshance shoals on Monday.

The passenger steamer Frank E. Kirby, has fiinished her season's work and has gone into winter quarters here. The season has been a very prosperous one in every way and the Kirby has well maintained her excellent reputation.

The steamer Mohegan is the first boat of the Marine City fleet to go into winter quarters. The steamer Tempest No. 2 and barge Homer are also laying up there. The old passenger steamer Ontario was towed to Sombra, where she will be converted into a lumber carrier. Fifteen hundred dollars was paid for the old boat.

The Detroit Yacht club gave a smoker on Tuesday evening and several members of the Cleveland Yacht club attended. E. W. Radder of Cleveland, who is one of the best posted yachtsmen on the lakes, gave a lecture on "Modern Yacht Racing Rules and Measurements," explaining the rules with diagrams. This was one of the most interesting yachting lectures heard for some time.

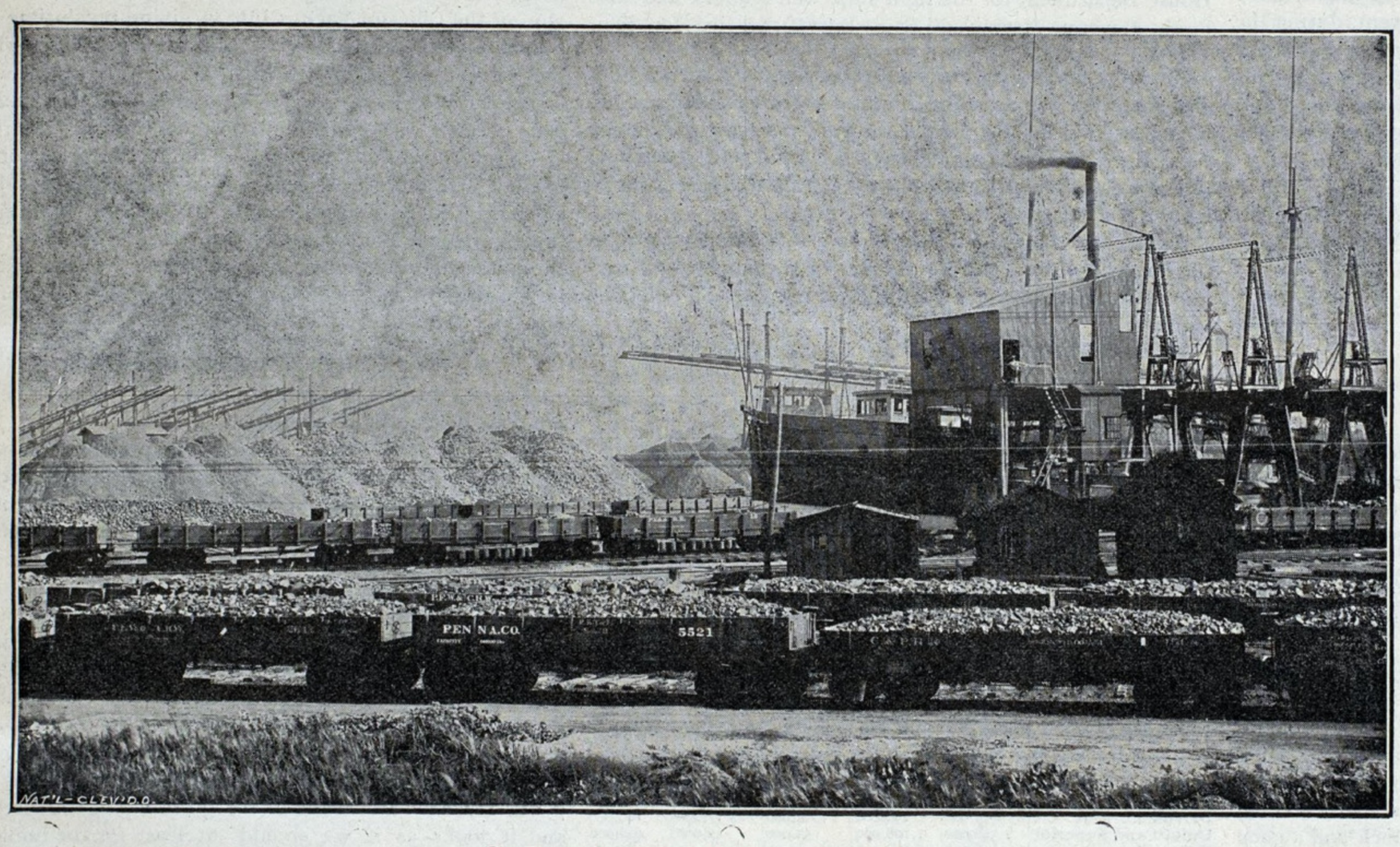
The owners of the Iron Age, which was picked up on Lake Huron and towed to Port Huron by the steamer Germanic, filed their answer in the United States District Court at Toledo, on Friday, denying salvage claims. It is asserted that the Germanic was entitled only to a tow bill for taking the Iron Age into port, and the danger of life and property was not great enough to warrant a claim for salvage. Their offer of $500 having been refused, the owners of the Iron Age now offer $1,000 in payment of the Germanic's claim.

A special meeting of the Interlake Yachting Association will be held at Toledo next Saturday evening in the Toledo Yachting Association rooms. The meeting has been called for the purpose to consider and act on the amendments to the racing rules as proposed by the Yacht Racing Union of the Great Lakes. Although this will be the most important business of the meeting, changes in the tables of scantlings and such other business that may be brought up by the delegates will be discussed. This will be one of the most important meetings held by the interlake association for some time. E. W. Radder, the Cleveland Yacht club representative, will attend the meeting.

Capt. George W. Bryant, for many years a master and owner of small tugs and scows out of this port died at his home Sunday morning. The captain had been a sufferer two and a half years from the effects of an electric shock received on a Jefferson avenue car during a thunderstorm, and of recent months had been practically helpless. He was born in Detroit 62 years ago, and from the age of 15 was a sailor. His apprenticeship was spent on the lakes, he first learning the engineer's trade. In time he bought an interest in small tugs, being once interested with Capt. Mills. The tugs Challenge and Parkman and the steamer Rouge were once his property. He leaves a widow and one son.

The 1,062 tons of Youghiogheny coal carried by the schooner F. L. Danforth when she sprang a leak recently on Lake Erie was sold at Amherstburg to Mullen for $1.30 per ton. A Detroit vessel line was negotiating with the agents of the coal to buy it, store it at Windsor, and send its boats over there as they needed coal for consumption from time to time. In this way the duty would have been avoided, as the coal was bound from a Canadian port to Fort William. The sale stopped this. Mullen, however, has his own docks at Amherstburg and can fuel it to American boats without paying duty thereon. The Danforth has been docked at this port for final repairs.

With his usual conservatism, care and foresight, Manager David Carter, of the Detroit & Cleveland Line, has taken note of the frequent breaking down of old engines, and as a precautionary measure is going to have the engines of the steamer City of the Straits practically rebuilt, or rather thoroughly overhauled this winter. These engines were in the steamer R. N. Rice, of the same line, which came out 31 years ago. They have always given satisfaction, but for that matter so had many of the engines which "went through themselves" in the last two or three years. The connecting rods and centers and other working parts will be replaced entirely by new pieces of the best make, and the less important pieces will be annealed that is, will be taken out, reheated in the shop, swelled and given their old tensile strength.



The Pennsylvania Co.'s Ore Docks, Cleveland.

THE famous roller boat, designed after many years experimental work by M. E. Bazin, to revolutionise our methods of ocean navigation, has been sold to a London firm for £1,200, little more than the price of the material as scrap. It will be remembered that the boat consisted of a platform having cabins on deck as well as boiler and engine, propelling a shaft runing downward at an acute angle to under the water astern, where there was the usual propeller. The platform was supported on axles with wheels, which were also rotated, and thus the vessel traveled along like a four or six-wheeled lorry on the street. The platform is now to be used as a pontoon landing stage; the wheels can be used only as scrap.

FLOTSAM, JETSAM AND LAGAN.

Six new steamers are to be added to the fleet of the Austrian-Lloyd Company.

In German shipbuilding yards the Hamburg-American Steam Packet Company has 10 large steamers under construction.

The steamer Escanaba has been sold by the Escanaba & Lake Michigan Transportation Co. to Capt. Chamberlain and others, of Chicago, for about $20,000. She will run between Chicago and Owen Sound next year.

The Anchor Line Elevator B. at Erie, Pa., had a narrow escape from destruction on Tuesday. Fire started in the conveyor, and caused a damage of $2,000 to the building, and $30, 000 worth of wheat was destroyed.

The Sparta mine has ceased shipping for the season with an excellent showing to its credit for a property that has just experienced its second season. The output of the property was 236,000 tons. The Sparta last season shipped 66,729 tons.

The new steamship Havana, recently launched at Cramp's yard, Philadelphia, for the Cuba Mail Steamship Company, will, it is expeceted, prove one of her finest class afloat. She is about 5,000 tons gross and equipped with every modern device for superior service.

C. L. Anderson, a marine expert, has completed an examination of the boats of the Central Vermont Line for Charles Parsons, the owner of the Ogdensburg & Lake Champlain Railroad. It is understood that Mr. Parsons is contemplating the purchase of the steamers.

The barge John O'Neil, chartered by C. R. Jones & Co. of Cleveland, to the Atlantic Transportation Co. is wrecked. Her owners are notified that she is ashore on Prince Edward Island, and it is more than probable that she will prove a total loss. The vessel is fully covered by insurance.

The Russo-Chinese Railway Company, is about to give out orders for building six 15-knot passenger-boats of 3,000 to 4,000 tons register for the maintenance of a forthnightly line of steamers between Ta Lien Wan, Port Arthur, Shanghai, and Nagasaki, in connection with the Siberian Railway, which is expected to be finished by the year 1903. Two of these new boats are, it is said, to be built in Newcastle, one in Greenock one in Holland, and two in Germany.

Two torpedo vessels for the Japanese Government have just been constructed in the Augustin Normand yard at Havre. They have a length of about 120 feet; 13 feet beam; and a draught of 7 feet. They are fitted with a single screw and triple expansion engines. They were completely finished on the stocks, and after reception by the Japanese agents were taken to pieces, which were numbered and packed in cases to be forwarded to Yokohama, as it was thought that the boats could not navigate safely in Chinese seas.

The steamer John Craig collided with the tow barge Baltic, consort of the Walter Vail in the Straits of Mackinac, and was obliged to put into Milwaukee, leaking, on Sunday. The Baltic was only slightly damaged and she also reached Milwaukee. The collision occurred through a break down in the Craig's steam steering geer when the vessels were passing each other. The Craig had a cargo of coal from Buffalo to Chicago, to which port she proceeded after receiving temporary repairs.

Captain D. Elliott, of the tug Boscobel, tells a little joke at his own expense. He was strolling along the dock at Erie last Monday night, thinking of anything but where he was going, when he suddenly found himself walking on air. He had stepped off the edge of the dock. It was seven feet to the water, and the water was fourteen feet deep, and Captain Elliott can't swim. Luckily several people had been watching him, so he was presently pulled out, a little wet, but not hurt. He promises to look where he is going next time.

The Boston Fruit Company is enlarging its operations as well as its fleet of steamers; the four ships building at Philadelphia, three of which will be named after American admirals, will give it additional facilities, and the company is stated to have secured control of the fruit interest of the eastern part of Cuba, as well as an interest in the Dominican Fruit Company, formerly H. Dumois & Co., with headquarters at San Domingo. Arrangements are being accordingly effected for new steam services to the leading fruit ports, such as Gibara, Banes, and Sama.

An estimate places the amount of lumber picked up on the beach between Grand Haven and Pigeon Creek, the past five or six weeks at 100,000 feet, besides a vast amount of other wreckage. It has been a profitable fall for the many beachcombers who patrol the lake shore after every gale. Some of them have been able to get possession of from 15,000 to 20,000 feet of lumber. Last week a number of farmers were near Grand Haven repairing roads when the cry was raised that lumber was coming ashore. A few minutes later every one of the fourteen teams at work on the roads could have been seen on the beach gathering the stuff that drifted ashore.

CORRESPONDENCE.

☞ We do not hold ourselves responsible in any way for the views or opinions expressed by our correspondents. It is our desire that all sides of any question affecting the interests or welfare of the lake marine should be fairly represented in THE MARINE RECORD.

ONE OBJECT BEARINGS.

(COMMUNICATED.)

Among the many fallacies presented in the recent manual issued for lake captains the application of the Blish distance finder, by officers of the Albatross, when coasting at night and during stormy weather, is of particular interest.

The instructions read: "With the course and distance and two bearings of a point of land * * * the distance finder will give the distance of the point at the time of the first and second bearing, the distance to be run from the second bearing to bring it abeam, also the distance at which it will be passed if the course is maintained. Repeated observations will show whether the vessel is actually making her course." Bearings are counted in points or degrees from the ship's heading or course steered, and distances are measured by the patent log.

From the preceding statement it appears that the distance finder is merely a jack to dispense with computation by geographically finding two sides of a triangle when the third side and two angles are known.

In the solution of this problem it has been the misfortune of the officers of the Albatross to use a wrong basis by substituting the course steered and the distance run by patent log for the course and distance made good; thus ignoring the corrections for leeway and current, which disregard in coasting, frequently brings disaster.

To illustrate this point, the problem from the manual may be used under the assumption that the current, during the interval between the first and secong bearing, sits in the direction of the course steered 2.5 miles. First bearing 30° from the ship's head, second bearing 65° from the ship's head, distance by patent log between bearings 8 miles. The following table shows the comparative results:

OBJECT.	Distance of vessel from object, miles.—Correction for current		Difference in distance.
	Applied.	Ignored.	Miles.
At first bearing.	16.6	12.6	4.0
At 2nd bearing.	9.2	7.0	2.2
When abreast...	8.3	6.3	2.0

On account of neglecting current the distance at the first bearing is 4 miles wrong; at the second bearing, 2.2 miles, and when abreast, 2 miles. Although the vessel keeps her course she is actually running on a line two miles farther from the object than calculated by the rule of the officers. If in the direction of the course made good a shoal or reef is found, and the vessel maintains her course, stranding is certain.

A wrong basis always furnishes wrong results; therefore, the fallacy of neglecting leeway and current in the solution of the problem needs no further illustration nor comment.

That the Albatross during several years of service never got stranded, while acting under the delusion that "repeated observations will show whether the vessel is actually making her course," can only be attributed to good luck and a good lookout.

Lake captains, in figuring out one object bearings, are fully aware of the danger attendant upon ignoring the corrections for leeway and current, as may be seen from page 254, of the directory published by the Grand Lodge; and, therefore, are far in advance of those who have been called upon to teach them navigation.

JOHN MAURICE.
Civil Engineer and Nautical Expert.

Chicago, Nov. 23, 1898.

STANDARD AUTOMATIC RELEASING HOOK CO. NEW YORK.

To the Editor of the Marine Record:

DEAR SIR—In view of the fact that the subject of proper equipment for life-boats is being discussed in the marine and daily papers, without suggesting a means with which to overcome the difficulty, the idea occurs to us that it will not be amiss to call the attention of writers and others to one device that is being extensively used with entire satisfaction by the government in all its marine branches and many progressive steamship lines, among which, in your section, is the Goodrich Transportation Co., Chicago, to whom we take the liberty of referring.

One incident that has recently come to our notice showing the value of a reliable detaching device that may assist to enlighten those who probably are in the dark, as it were, in this matter, is as follows:

"While the U.S.S. Annapolis was bound this way through the Gulf of Mexico one of the apprentice boys fell overboard. A boat was lowered and in thirteen minutes from the time the alarm was sounded they had him in the boat. He was exhausted when picked up and would have been drowned had there been any delay in getting the boat detached and away from the ship. This was accomplished, the log shows, without stopping the ship and in a heavy seaway." Many such instances could be related that point to the value of such a device, but this is the most recent.

Mr. Arthur B. Cassidy, N. A., in his essay on "Standard Boats of the Navy," read before the Society of Naval Architects and Marine Engineers at their last meeting says: "Of the fittings of the boats the greatest difficulty has been with the detaching apparatus of life-boats. Many kinds have been used and failures to work at the proper time have been noted. The Automatic Releasing Hook is now being extensively used in the navy. By this appliance the boat is under control from deck, and is rapidly lowered and automatically released as soon as the boat touches the water." This opinion is arrived at by having access to the reports that have been made from time to time during the last six years by naval officers who have been instructed to report on its efficiency as a detaching device for use in the navy. Based on these reports the vessels in this branch of the service have all their boats equipped with this device, and a supply has been ordered for the navy yards, and all stations throughout the country. It has been adopted by the Light-House Department for the light-ships and tenders, and also by the Revenue Marine and Coast Survey Service for their vessels.

Not only has the government recognized its merits, but also many of our passenger and freight steamers whose managers have had experience in these matters, and know the value of a reliable appliance of this kind, and with whom the safety of their patrons and crews of their vessels is not a matter of minor import.

This device should have played a very prominent part in the recent disasters, and would have been the means of saving many lives that were sacrificed by the use of defective appliances.

The device herein referred to, the Standard Automatic Releasing Hook for boats, has earned the highest testimonials of any device of the kind in existence, and has the record of never having failed to perform its part under the most trying and difficult circumstances. It has saved many lives and will save many more.

Yours very respectfully,
STANDARD AUTOMATIC RELEASING HOOK CO.,
Per JAS. R. RAYMOND, Manager.

VISIBLE SUPPLY OF GRAIN

As compiled for The Marine Record, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo	2,356,000	1,475,000	1,073,000	123,000	831,000
Chicago	1,870,000	8,577,000	751,000	140,000	278,000
Detroit	99,000	296,000	4,000	12,000	106,000
Duluth and Superior	2,318,000	1,108,000	55,000	42,000	492,000
Milwaukee	16,000	.....	.....	.....	79,000
Montreal	90,000	210,000	280,000	6,000	19,000
Oswego	80,000	156,000	.....	.....	68,000
Toledo	169,000	300,000	111,000	16,000	.....
Toronto	68,000	.....	3,000	.....	14,000
On Canal	430,000	611,000	157,000	.....	77,9000
Grand Total	21,392,000	23,238,000	5,756,000	1,021,000	3,784,000
Corresponding Date, 1897	32,788,000	43,341,000	15,514,000	3,565,000	4,631,000
Increase	2,198,000	.....	257,000	4,000	443,000
Decrease	.....	291,000	.....	.....	.....

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

THE most sanguine naval action of the war, and one that showed to the full extent that reckless daring and cool effrontery displayed by American soldiers and sailors, was the engagement between the American vessels and Spanish gunboats off Cardenas, May 11, 1898. It was there that the men in the Winslow fought until their boat was completely disabled, and was all but wrecked when the Hudson rescued them. The story of this engagement is graphically told by Lieutenant Ernest E. Mead, U. S. R. C. S., navigating officer of the Hudson, in Harper's Magazine for December. The article is illustrated from drawings by H. Reuterdahl and from photographs.

YACHTING.

The international racing between the United States and Canada, scheduled for next year, is attracting much attention among the yachtsmen of New York and Boston. The races for the Seawanhaka cup for the last three years have done much to assist this, and the American yachts will again contest next year for the selection of a representative to sail in Canada for this trophy.

A second international cup has now been hung up which bids fair to eclipse the older trophy in general interest. New York yachtsmen are watching the proceedings in regard to the Canada's cup and it is owing to a suggestion emanating from New York and from officials in the North American Union that the class previously intended to race for this cup was altered from the 42 to the 35-foot fleet. This suggestion was made because it was thought that the racing among the 35-footers would be more extensively built for.

The value of the suggestion is shown now by the numbers of yachts to be built. Four are to be brought out in Chicago for selection of a craft to go to Canada to back the challenge. Three craft are to reach Kingston, Ont., to compete in the defense trials at Toronto. At the last named city members of the Royal Canadian Yacht Club will produce four racers in the interests of the defense The commodore of the club, who designed and sailed the Bonshaw in the Seawanhaka cup trials last year, will now design and have built another yacht for these contests. Cuthbert, the son of the man who designed and sailed two challengers for the America's cup, will model one of the coming boats. George Gooderham, the present owner of the yacht Canada, which, at Toledo, won the trophy now to be race for, will bring out one competitor. In Chicago, Com. F. W. Morgan, of the Chicago Yacht Club, is giving much time to the selection of models and will build to win. The owner of the well-known yacht Vanenna, W. L. Crawford, and the owner of the Siren, George R. Peare, will also build one each. Some, and perhaps all, of these Chicago racers will be designed in New York, as Poeckel, of Chicago, (formerly of the Herreshoff yards), has not been much heard of here since his Vencedor was beaten by the Canada. It is reported that Gardner & Cox, of New York, know something about this affair, and that a Chicago yachtsman wants a boat just like their Cartoon, which wiped the floor with Boston this year.

EASTERN FREIGHT REPORT.

Messrs. Funch, Edye & Co., New York, report the Eastern freight market as follows:

Since our last report we have experienced a partial recovery of the former active demand for grain, resulting in a check to the declining tendency in freights, and in the fixture of a number of boats offering on our market. Owners' views have stiffened up in consequence, but so far it has not been possible to close at their enhanced figures for grain, since both the Gulf and the Atlantic ports are beginning to show indifference to further fixtures for this month and December, and will only touch later boats at quite a concession over present quotations. Some fixtures for time boats have still been effected at the recently established high rates to concede these figures. For general trades the enquiry for steam tonnage has continued light. Quite recently the demand for grain has again decreased, and it looks as if we should, at least for the immediate future, have to face a market developing strength only by fits and starts, with intervals of pronounced weakness.

We have absolutely nothing new to report in regard to sailing vessels; the market remains stationary, with a limited supply of tonnage and not much demand.

SUMMARY SHOWING THE NUMBER OF VESSELS IN THE UNITED STATES NAVY.

First-class battleships	12	Training ships	1
Second-class "	1	Special class	2
Armored cruisers	2	Torpedo boat destroyers	16
Armored ram	1	Steel torpedo boats	35
Double turreted monitors	4	Submarine torpedo boats	1
Single " "	13	Wood torpedo boat	1
Protected cruisers	13	Captured in war	8
Protected cruisers, wood sheathed	2	Iron cruising vessels	5
Unprotected cruisers	3	Wood cruising vessels	8
Gunboats	9	Sailing vessels	6
Light-draft gunboats	3	Tugs	14
Composite gunboats	6	* Wooden, steam	11
		* Wooden, sail	6

* From the foregoing it may be seen that the total number of vessels in the regular navy number 189; 17 of which, marked with an asterisk, are pronounced unfit for sea service. The auxiliaries show a total of all classes, including departmental tonnage aggregating 123 vessels, making a grand total of 312 craft.

THE TWO ISTHMUS CANALS.

Gen. Henry K. Abbott, of the Engineer Corps of the United States Army, and one of the International Technical Committee employed by the Panama Canal Co., presents a comparison in the Forum for November between the Panama and the Nicaragua routes. The comparison is as follows:

PANAMA.	NICARAGUA.
Two good harbors now existing.	Two harbors to be created; one of them (Greytown) presenting unusual natural difficulties.
A good railroad now existing along the entire route.	A long and difficult railroad to be constructed, which General Hains considers should extend along all the route, except the lake portion, i. e., for a distance of 120 miles.
Actual construction, now well advanced (about two-fifths entire length actually completed), and remaining difficulties accurately known.	Practically nothing done in way of construction, and many of the essential elements undecided.
No constructions projected which are not justified by recognized engineering practice.	One or two dams projected wholly without precedent in canal work; and many embankments which must be permanent elements of danger.
Except the works at Bohio, no difficult excavations or constructions to be made where the annual rainfall exceeds 93 inches (only about 50 per cent. more than on our Gulf coast).	The most difficult work lies in a region where the observations of the canal company indicate the annual rainfall to be nearly 22 feet (256 inches) or nearly three times as much as at the Panama sites.
Route lies wholly in Columbia, where all interests will be benefited by the canal.	Route lies on the border of Nicaragua and Costa Rica, where local jealousy already exists, which may prejudice the interests of the canal.
Distance to be lighted and supervised when canal is completed, 46 miles.	Distance to be lighted and supervised when the canal is completed, 176 miles, or nearly four times as great as the Panama.
No active volcanoes within about 200 miles of the route of canal and earthquakes, therefore, less probable.	Active volcanoes near route; one, Omotepe, on an island in Lake Nicaragua, and another, Onose, only about 40 miles from the locks. An earthquake on April 29, 1898, at Leon, destroyed several buildings.
Cost carefully estimated on detailed plans at about $100,000,000.	Cost estimated by the government commission, on data recognized as wholly insufficient at about $133,000,000.
Concessions from Columbia (upon which whole undertaking is based) ample, satisfactory and unquestioned.	Concession from Nicaragua and Costa Rica (upon which whole undertaking is based) either expired, or expire next year, and officially declared by Nicaragua to be forfeited and void.

"But let us assume that both canals are constructed and open to navigation, and then compare the two routes, by considering which of them would undoubtedly be selected by vessels seeking to cross the Isthmus. This is a crucial test which will reveal their relative merits:

PANAMA.	NICARAGUA.
Ports both known to be good and easy of access.	Both ports artificial, to which access may be doubtful, especially on Atlantic side.
Length of route, 46 miles, and time of transit 14 hours.	Length of route, 176 miles, and time of transit, not less than 44 hours.
Summit level probably 103 feet and perhaps only 66 feet.	Summit level, 110 feet.
Locks double from the opening of the canal, one chamber 738 feet by 82 feet, and the other 738 feet by 59 feet, with intermediate gates.	Locks single, (subsequently to have another chamber added); dimensions, 650 by 80 feet.
Curvature gentle. Smallest radius 8,200 feet. Of the 46 miles, 26¾ are straight, and 15 have radii equal to or exceeding 9,850 feet.	Curvature too sharp. Smallest radius in canal proper, 4,000 feet. For 68 miles the route traverses the San Juan river, where, to gain 47¼ miles as a bird flies, it is necessary to travel 67¾ miles—a loss of 43 per cent.
No troublesome winds or river currents to be encountered even in times of flood.	Heavy trade winds and strong river currents.

"It would seem from this analysis that there can be little difference of opinion as to which is the better route. But perhaps some enthusiastic advocate will say: "The Nicaragua canal may be the more costly, may present more natural difficulties, may require more time for construction, and may be less easy of transit; but let us have an American canal, made with our own money, and wholly under our own contiol."

"Such considerations are outside the province of an engineer. But perhaps it may be suggested that we have already interests and responsibilities on the Isthmus, where the Panama Railroad was built and is now controlled by an American company, under the American protection; that the business control of any canal must vest in its stockholders and bondholders in time of peace, while, in fact, in time of war—unless its neutrality be guaranteed by the great maritime powers—the transit will be controlled by the belligerent having command of the sea.

"May it not, then, be wiser for our Government to extend its powerful assistance to what nature has determined as the best route, rather than to expend more time and more money for what, after all is said, must remain a distinctly inferior canal, unable to compete with its rival for the commerce of the world?"

A LARGER NAVY WANTED.

In his forthcoming annual report Secretary Long, U. S. N., will recommend that Congress during its coming session authorize a large increase of ships and men for the naval establishment. He has determined to incorporate in it the recommendations of the Board of Construction, as to the number of ships.

His recommendations will include the authorization of the construction of this number and classes of ships:

Three battleships, of 13,500 tons displacement. Three armored cruisers, of 12,000 tons displacement. Three second class cruisers, of 6,000 tons displacement. Six third class cruisers, of 3,000 tons displacement.

The Secretary of the Navy will also recommend that authority be given to the department to enlist 20,000 men and 2,500 boys.

INSIST ON THEIR CHARTERS.

Three of the schooners chartered to the Atlantic Transportation Co., and now among the ten hung up this side of the St. Lawrence rapids are the J. H. Rutter, owned by Thomas Adams; Shawnee, owned by J. W. Westcott, and the William McGregor, owned by E. T. Peck, James Findlater, and others, all of Detroit. So far as is known not an owner of this fleet of ten is agreeable to the proposition of the company that the charter price be called off until they can be floated over the rapids next spring, the term of charter be extended six months beyond the stipulated three years in consideration. The owners, as a rule, are in favor of receiving the charter money through the winter and at the end of the three years giving the services of their vessels free for six months. This would insure their return to the lakes in the spring, at a time when they could be kept in employment. Thus far the company has not accepted the proposition.

TALK OF ANOTHER CAR FERRY ROUTE.

A despatch from Springfield, Ohio, says: The long-formulated plan of connecting former Senator Brice's system of railroads, and establishing a great system from the Atlantic seaboard to Milwaukee and the Northwest, seems to be on the eve of consummation. The recent purchase of the Ohio Southern is a step toward the accomplishment of the end desired. It is stated that the incorporation of the Columbus branch of the Detroit & Lima Northern is a final movement for the completion of a line connecting the Norfolk & Western, the Detroit & Lima Northern and the Lake Erie & Western by a junction at St. Mary's. It is stated that work will begin at once on a road to be built from Columbus to Peoria and to be completed within ten months. This will make a continuous line from the Atlantic seaboard at Norfolk, to Lake Michigan, and a carferry system will be established to ply between Milwaukee and the Michigan shore.

THE Lidgerwood Manufacturing Co., 96 Liberty street, New York, have issued a new catalogue descriptive of their hoisting and conveying apparatus. It is a large book—9x12 inches—and has 142 pages. It contains illustrations, descriptions and tables of sizes of the numerous machines made.

MARITIME LAW.

SCHMIDT et al v. KEYSER et al—KEYSER et al v. SCHMIDT et al.

(*Circuit Court of Appeals, Fifth Circuit, May 31, 1898.*)

SHIPPING—DEMURRAGE CESSOR CLAUSE—CONSTRUCTION OF CHARTER PARTY.—A charter provided for demurrage, but a "cessor clause" therein provided that "the charterer's responsibility under this charter shall cease as soon as the cargo is shipped and bills of lading signed, provided all the conditions called for in this charter have been fulfilled or provided for in the bill of lading." The charter also provided that bills of lading should be signed as presented, without prejudice to the charter party, but any difference of freight was to be settled on signing the bills of lading. Held, that the signing of bills of lading did not operate to release the charterers from liability for demurrage accruing prior to the signing of the bills, from their failure to fulfill the conditions of the charter.

Appeals from the District Court of the United States for the northern district of Florida.

This was an appeal in a libel in admiralty to recover demurrage. A full statement of the facts in the case will be found in Wood v. Keyser, 84 Fed. 688, and steamship Co. v. Keyser, Id. 693.

Before Pardee and McCormick, Circuit Judges, and Parlange, District Judge.

Parlange, District Judge, as the organ of the court, said: "The issues in this case are the same as those in Wood v. Keyser (No. 654) 84 Fed. 688, 87 Fed. 1007, and Steamship Co. v. Keyser (No. 653) 84 Fed. 693, 87 Fed. 1005, recently decided by this court, except that in this cause reliance is placed on the 'cessor clause' to wholly relieve the charters from liability. The provisions of the charter party must be construed together. By articles 8, 9 and 10 of the charter party, it is clear that provision was made for demurrage. Article 6 provided that bills of lading should be signed as presented without prejudice to the charter party; but any difference of freight was to be settled on signing the bills of lading. Article 10, the 'cessor clause,' reads as follows: 'The charterer's responsibility under this charter shall cease as soon as the cargo is shipped and bills of lading signed, provided all the conditions called for in this charter have been fulfilled or provided for by bills of lading.' The bills of lading stated that all the conditions in the charter party pad been complied with. It seems plain that, under such bills of lading, no demurrage could be claimed by the consignees or their transferees; and if it be true, as contended, that the signing of the bills of lading operated the release of the charterers from all prior liability, then the shipowners have no recourse. But it is clear that the signing of the bills of lading did not release the charterers. Under the plain terms of the clause relied on, they were to be released on one of two conditions, viz, a full compliance with all the conditions of the charter party, or by making provision in the bills of lading for the shipowners' security. The charterers complied with neither condition.

We notice that Lord Esher, M. R., in Clink v. Radford [1891] 1 Q. B. Div. 625, said that the main rule to be derived from the cases interpreting the 'cessor clause' is that the court will construe it as inapplicable to the particular breach complained of, if, by construing it otherwise, the shipowners would be left unprotected in respect to that particular breach, unless the clause is expressed in terms which prohibit such a conclusion. In Christoffersen v. Hansen, L. R. 7 Q. B. 509, where the charter party provided that all liability on the part of the charterer should 'cease as soon as he shipped the cargo,' it was held that the clause applied only to liability accruing after the loading, and did not release the charterer from liability accruing before the completion of the loading. The decree appealed for is affirmed."

IT is not to be understood that the Master's Manual, published by the marine underwriters at Chicago, is the only work of the sort issued in aid of safer navigation as the English Lloyds have published a similar work for many years. The English Lloyds for 1899 has already been issued, with the object of assisting the shipmaster in the prosecution of his duties, and there are few who could not find much that is new to them, notwithstanding the fact that they may have grown grey in the service. The astronomical ephemeris is sufficient for the ordinary navigation of a ship. It is, however, in the selection of tables in the articles on freeboard, meteorology, charts, surveying, tidal streams, compass deviation, calculation of tonnage, and other such subjects, that Lloyd's Calendar is of value to officers. The book, which is always nicely bound, is published by Lloyd's Royal Exchange, London.

MARINE RECORD

ESTABLISHED 1878.

Published Every Thursday by

THE MARINE RECORD PUBLISHING CO.,

Incorporated.

GEO. L. SMITH, President.

C. E. RUSKIN, - - - - - Manager.
CAPT. JOHN SWAINSON, - - - - Editor.
THOS. WILLIAMS, Chicago, - - - Associate.

CLEVELAND, Western Reserve Building. CHICAGO. Royal Insurance Building.

SUBSCRIPTION.

One Copy, one year, postage paid, - - $2.00
One Copy, one year, to foreign countries, - - $3.00
Invariably in advance.

ADVERTISING.

Rates given on application.

All communications should be addressed to the Cleveland office.

THE MARINE RECORD PUBLISHING CO.,
Western Reserve Building, Cleveland, O.

Entered at Cleveland Postoffice as second-class mail matter.

CLEVELAND, O., NOVEMBER 24, 1898.

THERE is every indication at present that Mr. F. W. Wheeler will succeed in starting up the West Bay City shipyard again. The city council of West Bay City are considering the advisability of canceling a sum of about $15,000 due for taxes, and the citizens are willing to come forward with a bonus. With a little more financial assistance and credit, which, perhaps, Mr. Wheeler sees his way to obtain, this well equipped plant will again enter into competition for lake shipbuilding.

A COLD wave swept over the lower lakes on Tuesday and Wednesday, but we did not experience the heavy gales predicted by the Weather Bureau officials. It is possible to have a cold snap in a dead calm so far as air in motion is concerned, although it was fresh enough on Lakes Superior and Michigan, and many vessels had to seek shelter. Fortunately no wrecks or loss of life has been reported as the majority of vessels remained in port until they learned what the predicted blizzard amounted to.

MANY of the most prominent aids to navigation have been removed before there is any indication of vessels going into winter quarters. Each season there seems to be an undue haste in removing light-ships and buoys, and this fall is no exception to the previous custom, though it does seem as if the light-house inspectors were indeed a little premature and ahead of former seasons in their work. The Straits of Mackinac presents very intricate navigation in the fall of the year, and adequate aids in that locality in particular ought to have been left out as late as possible, especially when it is considered that they could be safely stored within a few miles of their location. From this time on to the close of navigation is the most critical part of the seas n, and it may be that in saving say five thousand dollars in buoyage equipment, upwards of ten times that amount will be sacrificed by the underwriters and owners of lake tonnage. The Light-House Department no doubt desired to maintain the service equipment intact and in a good state of preservation, etc. It may also be considered that Congressional appropriations are never too liberal in the direction of a renewal of outfits or the establishment of new aids to navigation, and that the corners have to be closely shaved in expenditures to eke out the annual amount granted to the department. Notwithstanding the foregoing every effort should be made by the district inspectors to keep the more valuable aids to navigation in position to as late a date as is discreetly consistent with the best interests of the service and its duty to the commerce of the lakes, remembering, that one night in the fall of the year is, or may be, of more importance to a vessel or vessels than a whole month of the fine, clear, mild weather experienced during the summer months.

So that the RECORD staff may enjoy the day and give thanks on Thanksgiving, we have decided to go to press one day earlier than usual, or Wednesday instead of Thursday morning. We all have something to be thankful for, some more than others of course, but in taking the rough with the smooth and averaging it all up, this is not such a bad little world after all. The present time and future outlook promises fairly well a la marine and the RECORD has untold thanks to offer its numerous friends and patrons for favors and courtesies extended during the past year. We also hope that the ensuing year will not only add to the list of those who wish us well, but firmer cement the patronage and friendships formed in the past, for which, as the seasons roll around, we will again be truly thankful. Pipe all hands to turkey ! ! !

DURING the month of October, Scotch ship builders launched 42 vessels, of about 64,335 tons, against 28 vessels, of 46,736 tons in September, and 42 vessels of 31,082 tons, in October last year. For the year so far 385,335 tons have been launched, comparing with 260,152 tons for the corresponding period of last year, 321,678 tons in 1896, 317,879 tons in 1895, and 305,104 tons in 1894. During the last month English ship builders launched 30 vessels aggregating about 83,603 tons, against 30 vessels of about 58,572 tons in September, and 24 vessels, of 46,467 tons, in September last year. During the ten months of this year English shipbuilders have launched 285 vessels, of about 707,711 tons, against about 495,349 tons gross in the corresponding period of last year. One vessel, of about 7,000 tons was launched at Belfast. The total launched in the United Kingdom during the year so far have been 607 vessels, of about 1,174,846 gross, against 551 vessels, of 827,733 tons gross, for the first ten months of 1897.

LAKE FREIGHTS.

On wheat from Duluth or Fort William to Buffalo 2¾ cents rules, an advance of ¼ cent for the week, and some boats are now being held for 3 cents, which rate will likely be paid by the end of the week.

The wheat receipts last week beat all records at the head of the lakes. The receipts for the week before were ahead of all previous records, but last week beat even that mark. The wheat receipts last week were 4,177,470 bushels. The receipts during the previous week amounted to 3,713,072 bushels, and the receipts during the week a year ago last week were 2,082,048 bushels. The receipts of coarse grain last week were 806,710 bushels, a week ago they were 515,314 bushels, and last year they were 950,972 bushels. The shipments of wheat last week amounted to 3,671,603 bushels, in the week a year ago the amount was 980,177 bushels, and a week ago the amount was 2,729,397 bushels. The coarse grain shipments were 391,944 bushels, a year ago they were 846,403 bushels, and a week ago they were 641,726 bushels. The stock in store on Monday amounted to 2,317,800 bushels, an increase of 119,149 bushels.

A big business has been carried on in Chicago at 2 cents on corn to Lake Erie, 1⅞ cents to Georgian Bay, and 1¾ cents to Port Huron.

Ore charters from Lake Superior are almost at the wind up and but few more cargoes outside of season charter rates will be placed. Escanaba cargoes are still offering, but not at any advance in rates.

Coal tonnage is in fairly good demand at 40 cents all round to Lakes Superior and Michigan. From Ohio ports to Fort William 50 cents has been paid, and it is stated that brokers could secure that rate to Duluth if tonnage offered, but most vessels are going up light.

MAKING ILLEGAL USE OF A LICENSE.

It has been generally understood that the statutes provided due punishment for anyone who fraudulently altered, defaced or illegally used a license granted by the steamboat inspection service, such however is not the case as the following from the annual report of the Supervising Inspector General would clearly indicate.

A very important bill, frequently recommended by this office, namely, Senate bill 4391, to amend section 4445, Revised Statutes, Title LII, passed the Senate and is now before the committee of the House of Representatives, who will probably concur at the next session of Congress.

The amendment to the statute consists in adding thereto the following paragraphs, namely :

Every applicant for license as either master, mate, pilot or engineer under the provisions of this title shall make and subscribe to an oath or affirmation, before one of the inspectors referred to in this title, to the truth of all the statements set forth in his application for such license.

Any person who shall make or subscribe to any oath or affirmation authorized in this title, and knowing the same to be false, shall be deemed guilty of perjury.

Every licensed master, mate, pilot or engineer, who shall change, by addition, interpolation, or erasure of any kind, any certificate or license issued by any inspector or inspectors referred to in this title shall for every such offense, upon conviction, be punished by a fine of not more than $500 and by imprisonment at hard labor for a term not exceeding three years.

I quote from my report of 1897, showing the necessity for the legislation contained in above bill, as follows:

It was supposed that persons commiting forgery or perjury in the matters stated could be punished under existing statutes, but the honorable the Attorney-General decided otherwise, as may be seen from the opinion of that officer in a letter dated September 17, 1890, which is quoted in full, as follows:

DEPARTMENT OF JUSTICE,
WASHINGTON, D. C. SEPTEMBER 17, 1890.

SIR: Answering your letter of the 13th instant, in which you ask whether the alteration of a license to an engineer, issued under section 4441 of the Revised Statutes, so as to give the license the appearance of a higher class than that for which the license was actually issued, is a forging of a public record for the purpose of defrauding the United States, under section 5418 or section 5479 of the Revised Statutes, I have the honor to say that, in my opinion, such alteration is not within the section mentioned, nor within section 5423, the crime described in which is more closely allied to the misconduct stated in your letter. So far as I have been able to investigate the statutes, the only possible punishment provided by law is the revocation of the license under section 4450.

I agree with you that the importance of the subject demands that Congress should be asked to supply the omission in the statutes that provide a punishment for such misconduct.

Very respectfully,
WM. H. TAFT,
Acting Attorney-General.

THE SECRETARY OF THE TREASURY.

THE AGE OF NIAGARA FALLS.

The age of Niagara Falls, as indicated by the erosion at the mouth of the gorge, formed the subject of a paper by Professor G. Wright, read at the recent Boston meeting of the American association. The late Dr. Jas. Hall early noted the significant fact that "the outlet of the chasm below Niagara Falls is scarcely wider than elsewhere along its course." This is important evidence of the late date of its origin, and it has been used in support of the short estimates which have been made concerning the length of time separating us from the glacial period. A close examination made by Professor Wright, this summer, greatly strengthens the force of the argument, since he found that the disintegrating forces tendering to enlarge the outlet and give it a V-shape are more rapid than has been supposed. As a result of his investigations, he concludes that a conservative estimate of the rate of disintegration for the 70 feet of Niagara shales supporting the Niagara limestone, would be one inch a year, with a probable rate of two inches a year. But at the lowest estimate no more than 12,000 years would be required for the enlargement of the upper part of the mouth of the gorge 1,000 feet on each side, which is very largely in excess of the actual amount of enlargement. According to Professor Wright, the age of the gorge cannot be much more than 10,000 years, and is probably considerably less.

MORE PIRATICAL WRECKING.

In the recent investigation by Capt. W. H. Smith, the Canadian wreck commissioner, into the loss of the Thomson liner Ganges, in the Straits of Belle Isle, which occurred last month, sensational evidence was given by Capt. Dykes, the commander of the wrecked steamer, as to acts of gross piracy committed by inhabitants of the Newfoundland coast. They swarmed around the steamer in hordes, boarded her, and plundered the cargo. Schooners with their names concealed went alongside and took the cargo.

Capt. Dykes protested against these acts of piracy, and threatened prosecution, but it had no effect. The plunderers cut and hacked the vessel to pieces. The cabin skylight was cut in two to get the table out, and nothing was left standing in the chart room but four posts. All the steam pipes, steam whistles, etc., were torn away, and, in fact, everything of value was carried off.

The pirates even used guns to prevent Capt. Dykes and his crew from ascertaining the names of the plundering schooners.

EVOLUTION OF THE MODERN ENGINE SHAFT.

BY H. F. J. PORTER, M. E.

As we stand by the side of some large engine, watching the motions of its moving parts, there are certain of the latter which, from the peculiarity of their movements, especially arrest our attention. That these are important parts of the make-up of the engine goes without saying; that they are more important, however, than other parts which are less conspicuous would not be true when comparing the relative values of the various parts of a piece of mechanism, where each has its own special duty to perform, and where the successful working of the whole depends on its members equally, all unnecessary parts having been dispensed with. The moving parts of an engine are, or ought to be, forgings, in contradistinction to the cast stationary parts. The moving parts are subjected to stresses alternating from tension to compression, and forgings, having a high tensile strength as compared with castings, are selected for the purpose.

Of all the moving parts of an engine, the one that attracts our attention least is the shaft, for the reason that it is almost entirely hidden from sight. Its ends are surrounded by crank-disks and bearings; its center is imbedded in a fly-wheel, and the remainder, or a large part of it, is concealed in a dynamo or pulley. And yet this is a very important part of the engine. Through it the power generated by the boiler and stored up in the fly-wheel is imparted to the work that the engine was designed to perform. Upon the care with which its proportions are calculated, its shape designed, and its manufacture carried out, depends to a great extent the future successful working of the engine. The history of the development of the shaft, from its primitive type to its modern representative, can be read at the present day by the interested observer who has a chance to see the old and the new in operation near each other. The first shaft was probably made from a stick of wood with such tools as were obtainable, and a very good shaft it was, if made sufficiently large to withstand the strains to which it was subjected. We find wooden shafts at the present day that have been running for years. Water-wheels in country towns are still operating flour and other mills by means of shafts hewn from logs grown on the banks of the stream that gave them nourishment. As machinery has improved, and steam engines have replaced the less reliable stream of water, iron shafts have taken the place of wooden ones. Cast iron was the first metal used. It was a good substitute, provided enough of it was employed to make the shaft amply large. But the low tensile strength of this metal required the size of the shaft to be very large and the resulting weight was cumbersome and expensive for the engine to move. It could be made solid, however, as this metal, when fluid, is peculiarly free from gases, so that blow-holes and porous spots are infrequent in shapes made from it. The ease with which it could be made has also caused this type of shaft to remain a favorite always, and many able engineers until recently have clung to its use, notwithstand- the pressure brought to bear upon them by the makers of various substitutes, all except one of which have been inferior, and that is the now universally acknowledged hollow forged shaft.

DOMINION WATER POWER.

Some interesting particulars of the water power available in Ontario are given in an article on the subject by Mr. T. W. Gibson, in the third part of volume 7 of the report of the Bureau of Mines. The author states that if Mr. Tesla's conclusion be correct, namely, that a waterfall affords us the most advantageous means of getting power from the sun for all our wants, excelling for this purpose not only muscular force, but wind and steam as well, the rocky uplands of northern and western Ontario may yet be reckoned among the most valuable parts of the province by reason of the vast number of waterfalls situated there. The main watershed dividing the system of the Great Lakes from that of the Hudson Bay runs in a north-westerly direction from the eastern boundary of the province north of Lake Temiscamingue to the head of Lake St. Joseph on the northern boundary, a distance of about 500 miles. It consists of a tableland or plateau rather than a sharply defined ridge, and is estimated to have an average width of about 70 miles, or an area of about 35,000 square miles, thus with the slopes on both sides affording an extensive catchment surface for the streams running to the north and south. Its elevation will average perhaps 1,400 or 1,500 feet above the level of the sea, or 900 feet above Lakes Huron and Superior. In places it approaches the shore of the latter lake, and for the greater part of its extent is situated at a comparatively short distance from either of these bodies of water. The consequence is, that the rivers and streams which flow from it into the Great Lakes, though mostly of considerable volume, are not of great length, and their descent is therefore usually rapid and abrupt, and marked in many places by cascades and falls.

FEEDER FOR THE PORT ARTHUR ROUTE.

Articles of incorporation of the Minneapolis & Southern railroad were filed this week with the Secretary of State of Iowa. The scheme is to build a line from Kansas City to Sauk Center, a distance of 520 miles, to connect the Northern Pacific and Great Northern railways with the Kansas City, Pittsburg & Gulf or Port Arthur route.

STEAMBOAT INSPECTION SERVICE ON THE LAKES.

Port.	1857.		1897.	
	Number of steamers.	Gross tonnage.	Number of steamers.	Gross tonnage.
Duluth, Minn. (lake)..	.....	.....	156	119,880
Chicago, Ill.....	16	5,637	234	155,982
Detroit, Mich.....	56	22,471	170	75,220
Grand Haven, Mich....	.....	.....	198	27,624
Marquette, Mich.....	.....	.....	110	9,878
Port Huron, Mich.....	.....	.....	207	70,842
Milwaukee, Wis.....	.....	.....	232	73,134
Buffalo, N. Y.....	42	33,294	368	226,909
Cleveland, Ohio.....	36	17,409	309	202,575
Oswego, N. Y.....	11	6,562	134	24,657
Burlington, Vt.....	7	3,575	52	3,812
Total Great Lakes ..	168	88,948	2,170	990,513

Increase in number of steamers 2,002; increase in tonnage 901,565.

CLAIM A FRAUDULENT SALE.

The Howard Transportation Co., of Duluth, began suit in the district court this week to recover $13,000 damages from the Rochester Thousand Islands & Ogdensburg Navigation Co. The grounds for the suit, as set forth in the complaint are that John G. Howard and Benjamin F. Howard bought the steamer Bon Voyage from the defendants on Feb. 11 last, on the guarantee of the latter that the boat was in first-class condition, was fully equipped, and would travel at the rate of 12 miles an hour, burning no more than three tons of coal to the hundred miles. The Howards afterward transferred the boat to the Howard Transportation Co., turning over the guarantee along with it.

The plaintiff alleges that the boat was not fully equipped, but, on the contrary, required an expenditure of $1,000 on the part of the defendants to make her perfectly safe and seaworthy; that she will travel no faster than 11 miles an hour, and burns in excess of three tons of coal to the hundred miles.

Depending on the guarantee of the defendants, the complaint states, the Howards paid $22,000 for the boat, and the plaintiff paid the Howards that amount. The complaint alleges that the boat is not worth more than $9,000, and they therefore ask to be reimbursed to the extent of $13,000.

ACCIDENTS CAUSED BY THE BURSTING OF BOILER TUBES.

From 1888-1896 the French Department of Public Works has investigated fifteen cases, outside those relating to locomotives, in which boiler tubes have burst, causing either death or serious injury. The author describes and discusses fully the details of these cases, dividing them into (1) tubes from 6 to 9 centimeters (2½ to 3½ in.) in diameter; (2) tubes over 10 centimeters (4 in.) in diameter. In no case were the tubes of steel or iron, fourteen cases occurring with brass and one with copper tubes. In the seven cases occurring to tubes under 10 centimeters in diameter, the cause has been either wear or corrosion, in addition to alteration of the metal caused by the action of the fire. Four of the boilers were constructed with interior furnaces, two were semi-tubular, and one of marine type. In three cases failure occurred during ordinary working, and four during a stoppage of the engine. In three of the latter either the firebox or smokebox door had previously been opened. In the eight cases relating to tubes over 10 centimeters in diameter, the first occurred during the trial of a boiler made entirely of copper, which was totally unfit for the pressure it was worked at. The seven other failures all happened to horizontal semi-tubular boilers with brass smoketubes, of which the first six form a series almost precisely similar, the pressure ranging from 5 to 7 kilos. (30 to 45 lbs. per square inch.) Failure always occurred on the furnace side, and generally affected one tube only. The seventh case was that of a horizontal tubular boiler in which several of the original brass tubes had been working for fourteen years, and in one of these the failure occurred. The author, in concluding, points out that the use of brass tubes, especially of the larger sizes, sooner or later leads to failure through the wasting of the metal under the action of the hot gases. He condemns the practice of leaving open the fire or smokebox doors, and advocates large and well ventilated boiler houses provided with easy exits.—Inst. C. E., Foreign Abstracts.

THE BELLEVILLE WATER TUBE BOILER.

The only steamers on the lakes fitted with the Belleville water tube boilers are the sister ships North West and North Land; the Babcock & Wilcox water tube boilers are fitted in one or two cargo steamers, but we are not aware that they have proved a howling success, at least the engine and fire room staff don't think so, as the tubes have been leaky, blowing out, etc.

Regarding the Belleville type of tubulous boilers, Fairplay, London, in a recent issue, says:

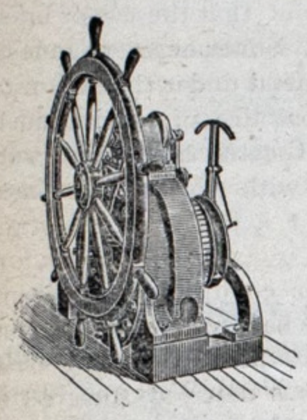
"For some time past it has been rumored that the Belleville boiler was to become the subject of a limited liability company. It is said that this was one of the Hooley schemes that were suspended on the collapse of that famous financier, and it will be admitted that the prospectus bears a strong impress of the Hooley methods. The figures are on a grand scale, £1,200,000. It is said that £400,000 of this sum was to go to Messrs. Maudslay Sons & Field in payment for their interest in the Belleville boiler, and £100,000 for their Greenwich works, and £320,000 to M. Belleville; the destination of the remainder being rather suggested than expressed. These figures appear large; perhaps very much too large; they are sure to be severely scrutinised whenever the company comes out, and the same remark applies to the estimates of profits. Admiralty work, on which apparently the company will have to depend, as merchant shipowners do not seem to take to the boiler, is not of the class that endureth forever; and the same may be said of patents. The promoter declares himself to be selling at a profit in the orthodox Hooley style, and shareholders in the Hooley companies know by this time what that way of doing business meant for them. Of the three gentlemen named on the board, two are said to have withdrawn. If so, they have acted wisely, as the validity of the patents is by no means to be taken for granted. The patents may be all right, but the following paragraph in the prospectus seems rather in the nature of a hedge:

'The English and other governments having agreed to pay, and having paid without question, the royalties charged in respect of these boilers, such payments and such official recognition shall be taken as conclusive evidence of the validity of the patents, without further guarantee, and application for shares will only be received on such supposition and basis.'"

A SHORT time ago the Russian admiralty made an interesting experiment with cellulose made of Indian corn pith as a packing for vessels. A cofferdam 6 ft. long, 6 ft. deep, and 3 feet broad, was packed with blocks of cellulose made from this material, which was supplied by an American company. The cellulose within the dam was compressed until it weighed 8 lbs. for each cubic foot. A 6-in. solid shot was fired through the dam, striking it at a distance of about 20 inches from the bottom. The shot struck the dam at a velocity of 1,000 feet a second, and passed clear through both the iron walls and cellulose packing. Less than one-half pound of the cellulose was carried out by the projectile. The water compartment of the dam was filled, giving a pressure of nearly 5 ft. of water on the perforated surface. In just half an hour a moist spot began to show on the outer surface of the dam, but it was evident that the moisture had come along the bottom of the packing, and not through the path of the shot. In four hours no water had come through the shot's path, and only 6 gallons had passed under the packing.

The schooner D. S. Austin, which was wrecked at Ludington, Mich., last week, has been swallowed up by the waves, and now not a sign of the schooner remains. It was thought that she would hold together for several weeks and afford ample time to remove her rigging and spars, but after she broke in two she went to pieces rapidly.

Queen City Patent Hydraulic Steerer.



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Generates no heat in pilot house.

Has large hand wheel.

Can be changed from power to hand steering instantly.

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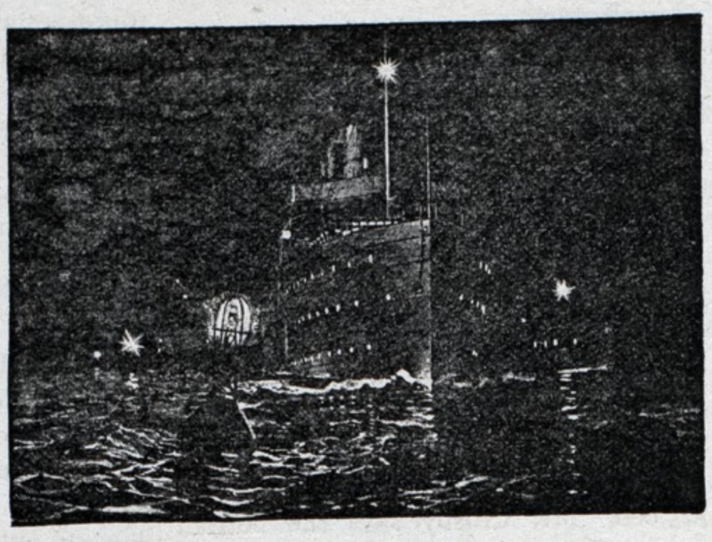

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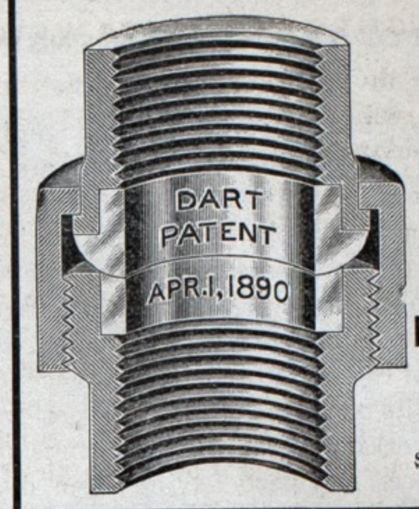

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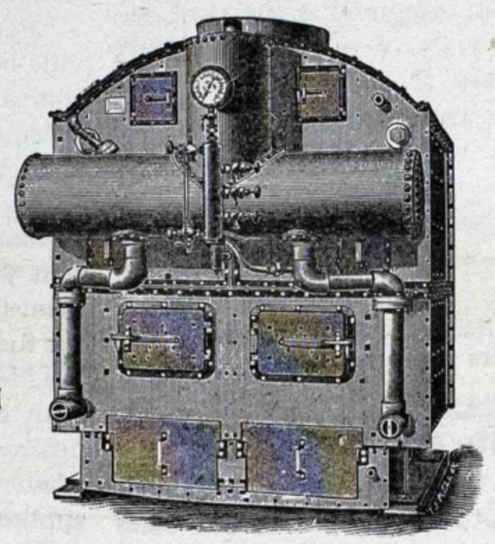

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DREDGING.

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NOTICE TO MARINERS.

LIGHT-HOUSE ESTABLISHMENT,
OFFICE OF THE LIGHT-HOUSE INSPECTOR, 11TH DIST.
DETROIT, MICH., NOV. 21, 1898.

LAKE SUPERIOR.—The bell and can buoys marking the shoal off Point Abbaye have been removed for the winter.

The Standard Rock light was extinguished and the keepers taken from the station on the 18th inst.

By order of the Light-House Board:

DUNCAN KENNEDY,
Lieut.-Commander U. S. N.,
Inspector 11th Dist.

DOMINION OF CANADA—ONTARIO.

CHANGE IN COLOR OF DEPOT ISLAND LIGHT.—From and after the 14th inst., the light at Depot Island, Parry Sound, Georgian Bay, will show as a fixed red light instead of a fixed white light, as at present.

DESTRUCTION OF KILLBEAR POINT BEACON.—The beacon on Killbear Point, Parry Sound, Georgian Bay, Ontario, has been blown down. As the government propose to build a light-house on Cousin Island, in this vicinity, the beacon will not be re-erected.

GAS BUOY ON HILLCREST SHOAL.—The United States Hydrographic Office have given notice of the establishment of a gas buoy, presumably by the government of the United States of America, off the southeast end of the rock in the St. Lawrence river, opposite Hillcrest, near the upper end of the narrows west of Brock group, Thousand Islands, 250 feet from the Canadian mainland.

The buoy is colored red, and is moored in 16 feet of water. The best channel is southeast of the buoy. The light is a fixed white light varied by white flashes every 10 seconds.

REMOVAL OF ROUND ISLAND SHOAL AND BUOY.—Round Island shoal, south of Round or Dark Island, Thousand Islands, river St. Lawrence, has been removed by the government of the United States by dredging to a depth of 18 feet at low water and the red and black spar buoy which theretofore marked it has been discontinued. F. GOURDEAU,

Deputy Minister of Marine and Fisheries.

Department of Marine and Fisheries, Ottawa, Canada, 7th November, 1898.

THE following lake-built steamer has been assigned an official number by the Bureau of Navigation, Treasury Department. Steamer Ann Arbor No. 3, built at Cleveland, and hailing from Toledo, gross tons 1,677, net tons 996.

SUN'S AMPLITUDES.

The following approximate amplitudes of the Sun's rising will be given each week in this column during the season of navigation. A second bearing may be taken by compass at sunset by reversing the east bearings given for the nearest latitude, as the change in declination for a few hours makes but a slight difference in the true bearing of the Sun's setting:

LAKE ERIE AND S. END LAKE MICHIGAN, LAT. 42° N.

Sunrise.	Bearing.	Bearing.
November 24	E. 28° S.	S. E. by E. ½ E.
November 27	E. 29° S.	S. E. by E. ⅜ E.
November 30	E. 30° S.	S. E. by E. ¼ E.

LAKE ONTARIO, S. END HURON AND CENTRAL PORTION LAKE MICHIGAN, LAT. 44° N.

Sunrise.	Bearing.	Bearing.
November 24	E. 29° S.	S. E. by E. ⅜ E.
November 27	E. 30° S.	S. E. by E. ¼ E.
November 30	E. 31° S.	S. E. by E. ¼ E.

N. END LAKES HURON AND MICHIGAN, LAT. 46° N.

Sunrise.	Bearing.	Bearing.
November 24	E. 30° S.	S. E. by E. ¼ E.
November 27	E. 31° S.	S. E. by E. ⅛ E.
November 30	E. 32° S.	S. E. by E. ⅛ E.

LAKE SUPERIOR, LAT. 48° N.

Sunrise.	Bearing.	Bearing.
November 24	E. 32° S.	S. E by E. ⅛ E.
November 27	E. 33° S.	S. E. by E.
November 30	E. 34° S.	S. E. by E.

With a compass correct magnetic, the difference between the observed and true bearing or amplitude will be the variation for the locality. Should there be any deviation on the course the vessel is heading at the time of taking the bearing, the difference between the observed and the true amplitude after the variation is applied, will be the amount of deviation on that course. If the correct magnetic bearing is to the right of the compass bearing, the deviation is easterly, if to the left, the deviation is westerly.

GOOD WORDS FOR THE BOYER PATENT WATER TUBE BOILER.

BROOKLYN, N. Y., October 12th, 1898.

Messrs. L. Boyer's Sons, New York:

GENTLEMEN—In reply to your inquiry as to the working of the Boyer Patent Boiler that I had put in the steam yacht Margaret last May, I desire to say that I have used it nearly continuously since that time and have run over five thousand miles in the Sound and east as far as Cape Cod. I do not hesitate to say that it is the best and most rapid steamer I have ever known. The difference in weight compared with my last boiler decreases the draught four inches, and the boiler being set so much lower makes the yacht much steadier in a sea way. It produces steam much more economically than my former boiler. It has increased the speed a good two miles per hour. It carries water steadily and is very easily fired. I have found it very reliable in a brush, carrying steam steadily. I believe from my experience with it that the construction is perfect and extremely durable. It has most certainly proved to be all that was represented, and really it has so many good points in addition to those I have described, that I can not do it justice on paper, or express myself strongly enough in its praise. I am pleased to have the opportunity to say what I have in its favor. I am Very truly yours,

JOHN S. LOOMIS.

TO DETERMINE THE EARTH'S FORM.

The prime object of the International Geodetic Association at its Stuttgart conference last month was the measurement of an arc in Ecuador. This, taken in connection with the measurement of an arc near the pole, now under way by the Swedes and Russians, will throw new light on the flattening of the earth. The comparison of the two measures will make it possible to determine how much shorter the polar diameter is than the equatorial, a knowledge of which is important both in the making of maps of great extent and in the solution of many astronomical problems. The International Association has planned to take up the work of continuous latitude observations at six stations encircling the globe near the 39th degree of north latitude. This parallel passes a little north of Washington and San Francisco, through Cincinnati and crosses Japan, Turkestan and Italy. In each one of the countries named an observatory will be erected. The three stations in the United States will be at Gaithersburg, Md.; Ukaih, Cal., and at Cincinnati, the exact parallel passing through the regular astronomical observatory there. The work will begin in the summer of 1899, and is now provided for during a period of five years.

WEIGHT OF DEEP SEA WATER.

When marine life began to command notice, the question of the depth to which life could extend divided scientific thought into warring camps. About 1840, it was generally believed that the bathymetrical limit was about 300 fathoms, and some strange ideas were current as to the physical condition of water when under a pressure such as a depth of two miles would produce. It was thought that skeletons of drowned men, or even heavy cannon and the "wedges of gold" that popular imagination places in the sea, floated at certain levels, beneath which is water so compressed as to be impenetrable. In fact, water is almost incompressible, and the weight of a cubic inch of it at the depth of a mile is very little more than at the surface; but it was assumed that no living being could survive a pressure which at 1,000 fathoms is about a ton to the square inch. We ourselves live under a pressure of about fifteen pounds per inch, and are unaware of it. Indeed, we sometimes waken on a morning when the barometer has risen, say, half an inch during the night, and consequently find ourselves sustaining an increased pressure of several tons, not only without suffering, but with a positive feeling of buoyancy and good spirits. On the other hand, if the tremendous pressure under which we live be relieved as by a surgical "cup," severe injury may follow. Acronauts suffer from this cause, and marine animals dredged from great depth often reach the surface in a most lamentable condition, with eyes protruding and viscera distended. —From "The Exploration of the Sea," by Dr. C. M. Blackford, Jr., in North American Review for September.

NOTES.

THE coppered hull of an old French ship, supposed to have been the frigate La Pelican, that was sunk over two hundred years ago, has been raised at Quebec, and it is believed that some treasure may also be recovered.

BIDS have been asked for furnishing to the New York navy yard a 100-ton floating crane, the construction to be such that the pontoon shall have a capacity in excess of the specified load for the crane of 300 gross tons and a freeboard of 2 feet. Four power capstans are to be provided and the crane must have a working capacity of 100 gross tons at a clear distance of 45 feet from one or both ends of the pontoon. The crane is to be provided with two hoists; one for the loads of 40 tons and over is to have a vertical speed of not less than 7 feet per minute; and one for loads of less than 40 tons is to have a maximum vertical speed of not less than 25 feet per minute. The maximum horizontal travel of all hoists is to be not less than 100 feet per minute.

CROSBY, of Milwaukee is said to have paid just $1,000 for the machinery and boilers of the H. A. Tuttle, wrecked at Michigan City. Its cost to the owners of the Tuttle, when she came out, was $25,000. Mr. Crosby says the bottom alone of the steamer remains intact. The engine and cylinders stand upright and much of them is above water. Though the price is low, the cost of removing the stuff will be considerable, says Mr. Crosby. He says, further, that two divers are at work, and many of the bolts have been loosened, but the machinery cannot be removed unless favorable weather prevails, and they have had but little of that thus far. The machinery consists of a fore-and-aft compound engine, two marine fire-box boilers, a steam steerer, steam capstan, steam windlass, shaft and screw. His talk indicates that it cannot be removed this season, and this will bring on a controversy between him and the government, which wants the entire wreck out of the way in short order to make a passage for a lot of lumber vessels that wish to enter.

A COURT of inquiry was appointed November 17 to investigate the causes of the loss of the Maria Teresa. The court is to assemble at the Norfolk navy yard and is composed of Capt. Day, Commander Schouler, Commander Tilley, with Lieut. Waller, of the Marine Corps, as Judge Advocate. The instructions to the court require a thorough investigation, not only of the circumstances attending the abandonment and loss of the vessel, but her condition preparatory to starting north from Guantanamo Bay, where she was put in condition for her trip to Norfolk. Lieut. Comdr. Harris, who was in charge at the time she was deserted, the crew of the vessel, and probably those of the Vulcan and Merritt will be called as witnesses. The Merritt Wrecking Co. has been notified that it may be represented before the court, if it so elects.

U. S. ENGINEER OFFICE, Duluth, Minn., Nov. 19, 1898. Sealed proposals for building pile and timber revetments for ship canals across Keweenaw Point, Mich., will be received here until noon, Dec. 20, 1898, and then publicly opened. Information furnished on application here, or, at branch office, Houghton, Mich. CLINTON B. SEARS, Major, Engrs. 47-50

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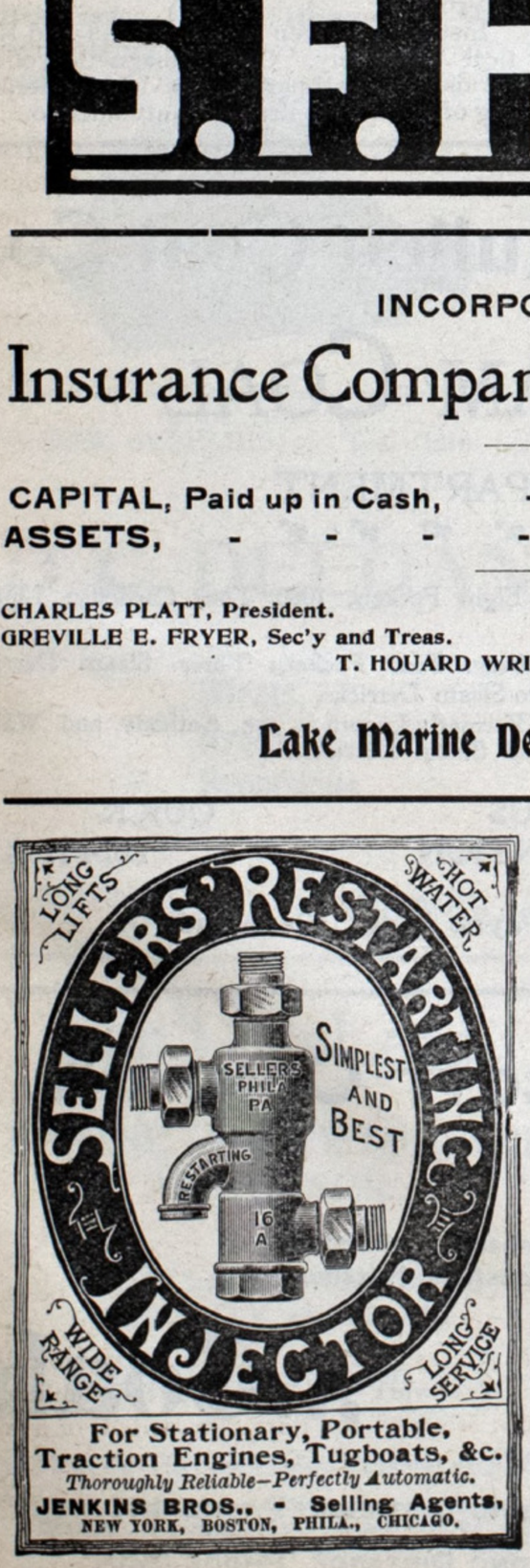

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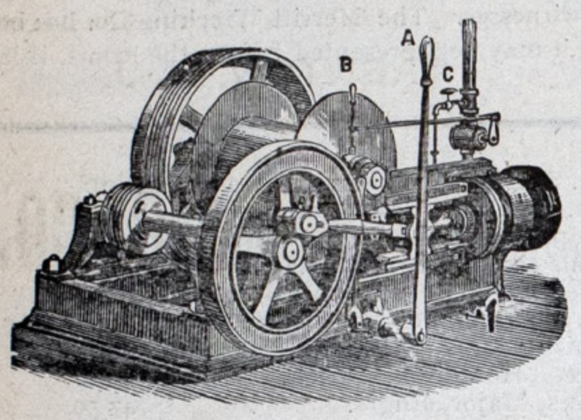

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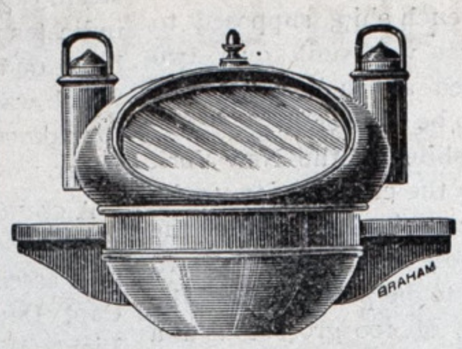

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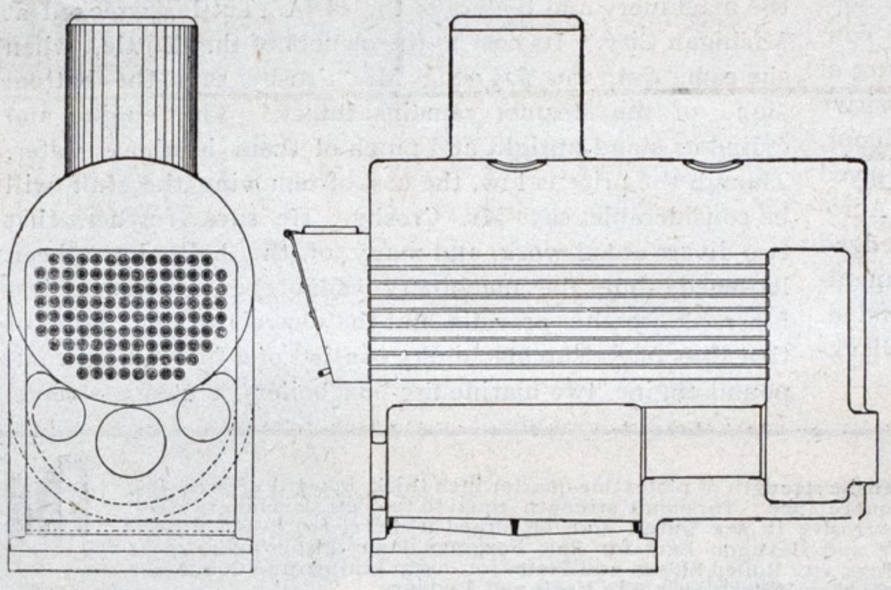

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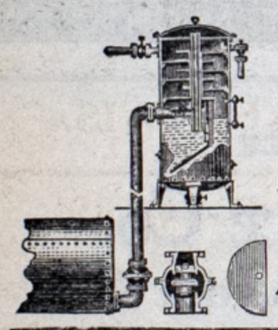

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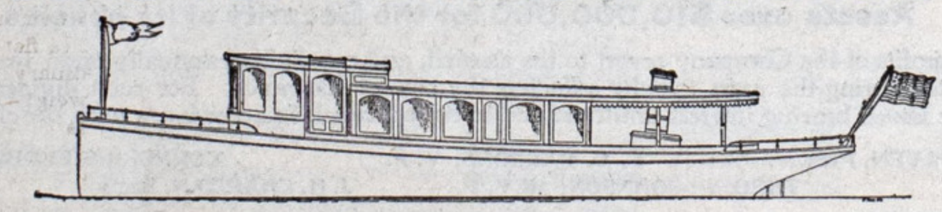

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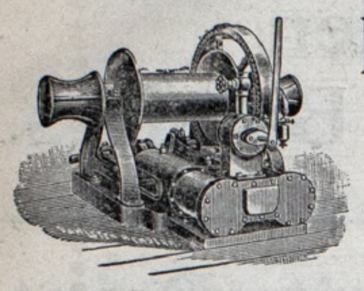

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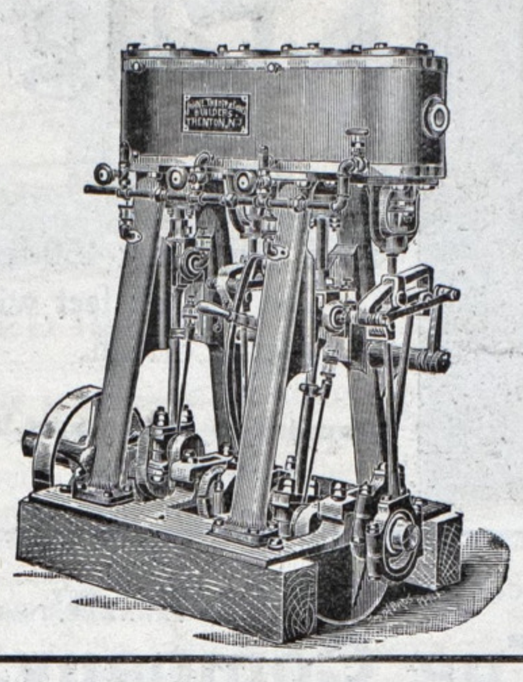

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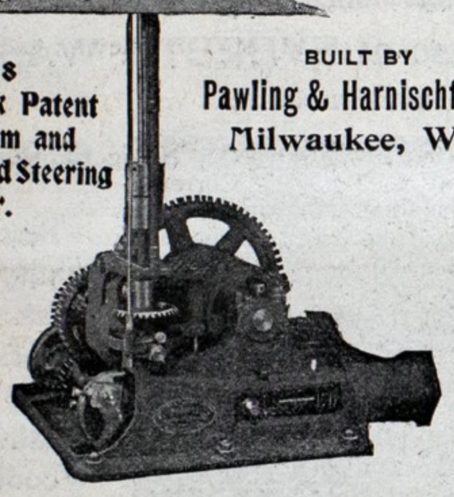

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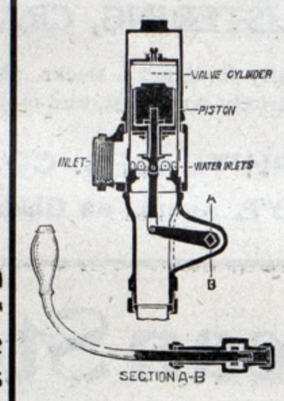

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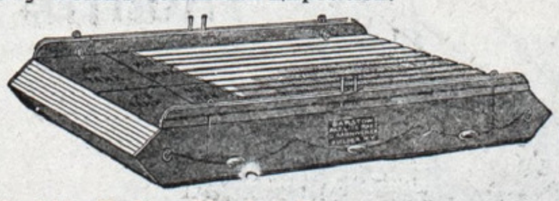

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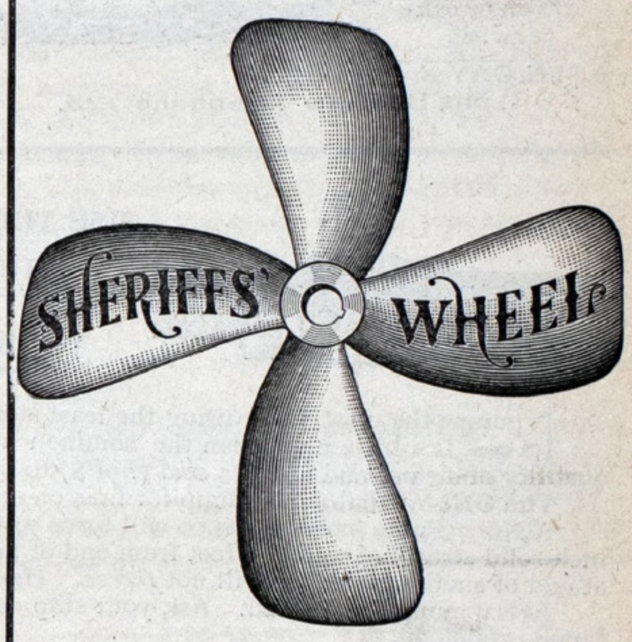

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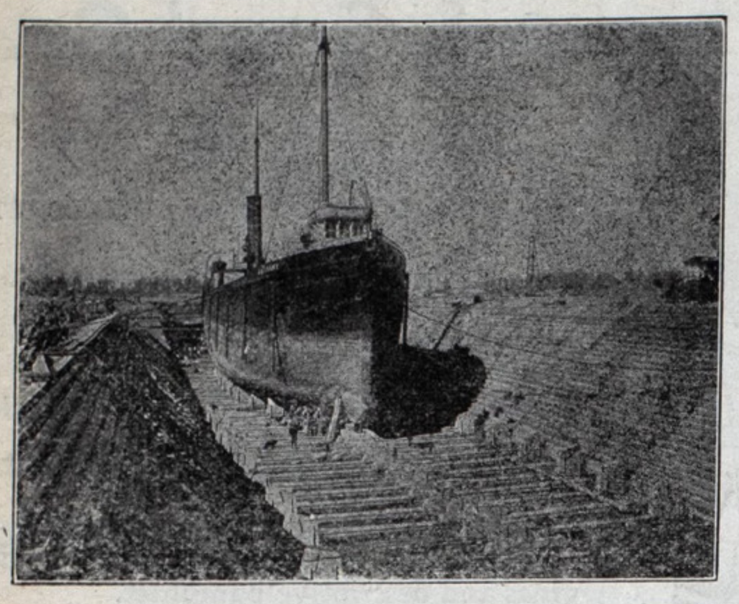

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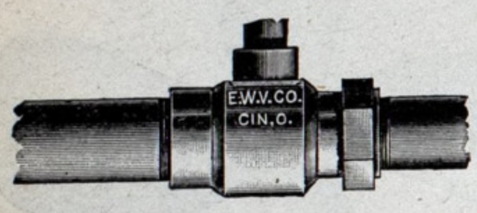

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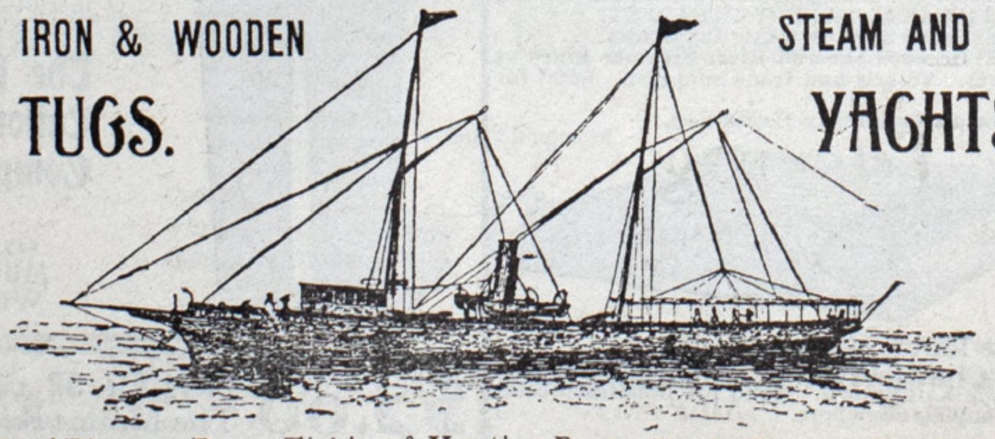

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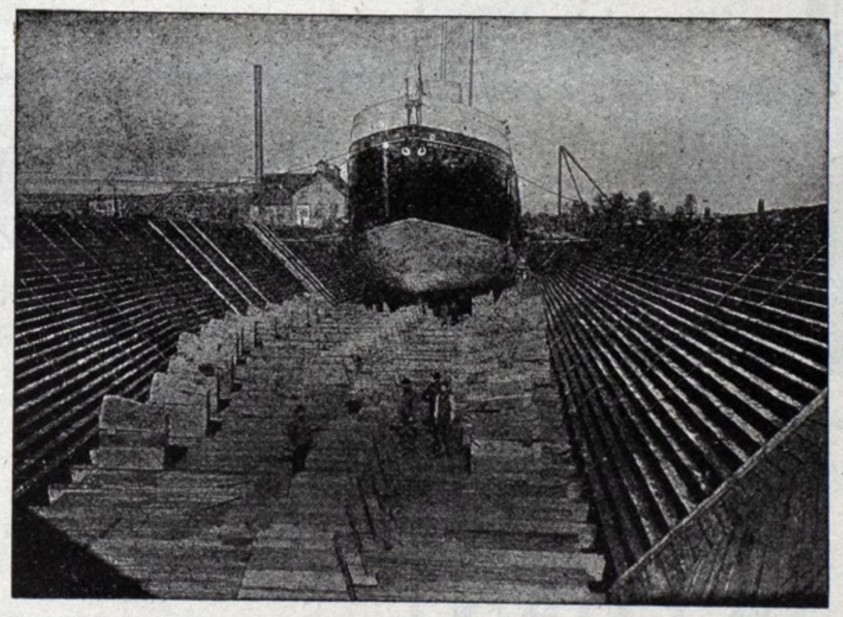

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